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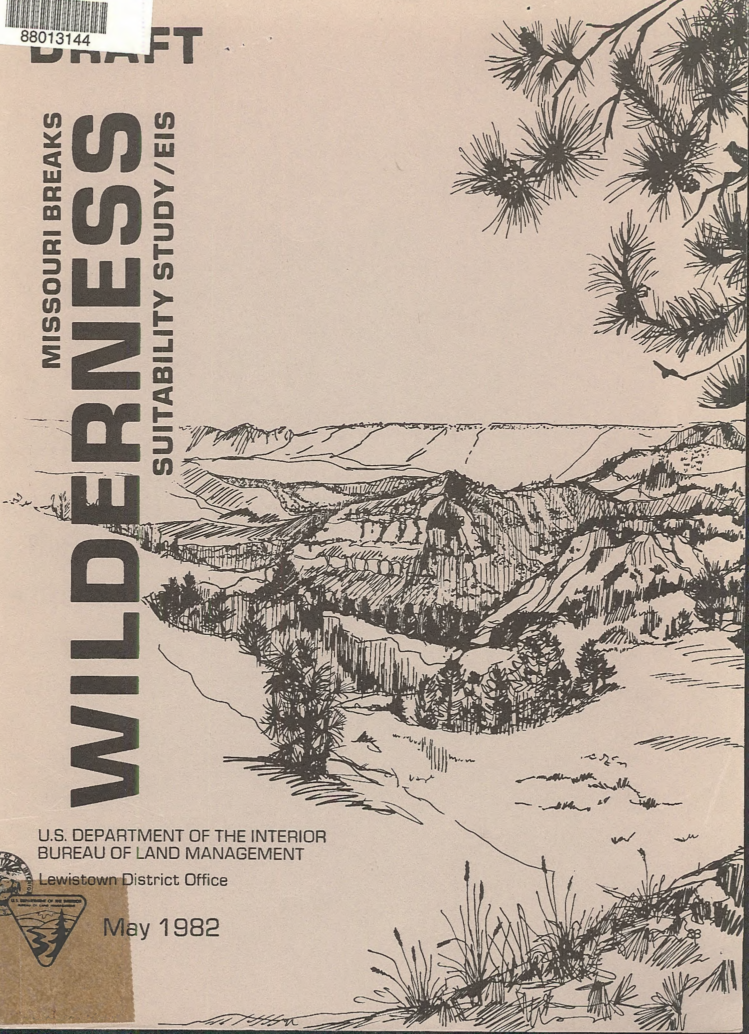

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Lewistown District Office

May 1982

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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Dear Reader:

The Missouri Breaks Wilderness Suitability Study/Environmental Impact Statement is presented for your review and comment. This document considers the suitability of 12 wilderness study areas for inclusion into the National Wilderness Preservation System. The study areas, containing 170,200 acres of public land, are administered by the Bureau of Land Management in the Lewistown and Miles City districts. The preferred alternatives are discussed in Chapter 2. The environmental impacts of each alternative are considered in Chapter 4.

Written comments will be accepted through July 26, 1982. Comments should be sent to Glenn W. Freeman, District Manager, District Office, BLM, Airport Road, Lewistown, Montana 59457.

After comments are received and reviewed, a final environmental impact statement will be prepared. The final statement will consist of comments, responses to comments, and updated or corrected information from the draft. Interested parties should retain their copies of this draft for review when the final is released.

Formal hearings for public comments have been scheduled as follows:

Jordan, Montana; June 16, 1982; VFW Hall at 7:00 p.m.

Terry, Montana; June 17, 1982; Prairie County State Grazing District Office, 612 Laundre at 7:00 p.m.

Malta, Montana; June 22, 1982; G-N Motor Hotel at 7:30 p.m.

Winifred, Montana; June 23, 1982; Winifred High School at 7:30 p.m.

Helena, Montana; June 24, 1982; Jorgenson's Motel, 1714 11th Avenue at 1:00 p.m. to 5:00 p.m. and 7:00 p.m. to 10:00 p.m.

Testimony received will be considered and responses will be prepared as part of the final environmental impact statement. Recommendations on suitability will then be forwarded to the Secretary of Interior and President for their review and recommendations. Congress will make the final decisions on those areas to be designated as wilderness.

Sincerely yours,

Michael J. Penfold

Michael J. Penfold
State Director

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WILDERNESS
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DRAFT

Prepared by

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
LEWISTOWN DISTRICT OFFICE

Michael J. Penfold

STATE DIRECTOR
MONTANA STATE OFFICE

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DRAFT

MISSOURI BREAKS **WILDERNESS** SUITABILITY STUDY/EIS

This Wilderness Suitability Study/Environmental Impact Statement considers the suitability of 12 wilderness study areas (WSAs) containing 170,200 acres of public lands for inclusion in the National Wilderness Preservation System.

Seven study areas are located in the Lewistown BLM District and five in the Miles City District.

This study recommends wilderness designation for the Burnt Lodge WSA and portions of the Cow Creek and Antelope WSAs in the Lewistown District, and portions of the Seven Blackfoot and Terry Badlands WSAs in the Miles City District. These areas total 79,770 acres.

This study further recommends no wilderness designation for Dog Creek South, Stafford, Ervin Ridge, Woodhawk and portions of the Cow Creek and Antelope Creek WSAs in the Lewistown District. This recommendation also applies to the Musselshell Breaks, Bridge Coulee, Billy Creek and portions of the Seven Blackfoot and Terry Badlands study units in the Miles City District. These areas total 90,430 acres.

For further information, contact Glenn W. Freeman, District Manager, Lewistown District Office, Bureau of Land Management, Airport Road, Lewistown, Montana 59457 or phone (406) 538-7461.

May 1982

SUMMARY

Purpose of The Study

The purpose of the study is to determine the suitability of 12 wilderness study areas (WSAs) in the Lewistown and Miles City BLM Districts for inclusion in the National Wilderness Preservation System (NWPS). This study is in response to Section 603 of the Federal Land Policy and Management Act, which directed the Bureau of Land Management to inventory, study and report to the Congress, through the Secretary of Interior and President, those public lands suitable for wilderness preservation.

Setting

The 12 WSAs considered are located in central and eastern Montana. Eleven are within the deeply eroded Missouri River Basin. One WSA, Terry Badlands, is in the Yellowstone River drainage. Seven WSAs, Dog Creek South, Stafford, Ervin Ridge, Woodhawk, Cow Creek, Antelope Creek and Burnt Lodge comprise public lands managed by the Lewistown District. The remaining five WSAs, Musselshell Breaks, Bridge Coulee, Seven Blackfoot, Billy Creek and Terry Badlands are managed by the Miles City District. The 12 WSAs include a total of 170,200 acres.

Dog Creek South and Woodhawk are in Fergus County; Stafford, Ervin Ridge and the west portion of Cow Creek are in Blaine County; the east portions of Cow Creek, Antelope Creek and the west portion of Burnt Lodge are in Phillips County; the east portion of Burnt Lodge is in Valley County. Musselshell Breaks, Bridge Coulee, Seven Blackfoot and Billy Creek are in Garfield County while Terry Badlands is in Prairie County.

The 12 WSAs were grouped into one study because of similar physiographic characteristics, wilderness values and common public issues.

Issues

The WSAs are considered in light of issues identified during both the wilderness inventory process and the study process. Concerns were expressed through letters, formal and informal public meetings, and other public contacts.

The key issues considered in the document are: livestock grazing, mineral development, recreational use and opportunities, wildlife management, fire management, social and economic considerations, range management, wilderness manageability, need for wilderness, wilderness quality and water resources.

Potential benefits which could occur from wilderness designation as well as the conflicts with other resource uses of the public lands were identified from the issues.

Alternatives

Each WSA was considered on its own merits as to whether the quality of the wilderness values and the multiple resource benefits, that could accrue from wilderness designation, balanced the conflicts with other resource uses. Alternatives were developed for each WSA in order to analyze these potential benefits or conflicts.

For all 12 WSAs, an all wilderness and no wilderness alternative were analyzed. For five of the WSAs; Cow Creek, Antelope Creek, Seven Blackfoot, Billy Creek and Terry Badlands, one or more partial wilderness alternatives were considered. These partial alternatives were developed wherever there was an opportunity to improve wilderness manageability and/or reduce resource conflicts by recommending only a portion or portions of a WSA suitable for wilderness designation.

Study Recommendations

The preferred alternatives recommend wilderness designation for Burnt Lodge (13,850 acres), portions of Cow Creek (21,590 acres) and Antelope Creek (9,600 acres) in the Lewistown District, portions of Seven Blackfoot (5,710 acres) and Terry Badlands (29,020 acres) in the Miles City District. There is a total of 79,770 acres within the five areas.

The preferred alternatives propose no wilderness for the Dog Creek South (5,150 acres), Stafford (4,800 acres), Ervin Ridge (10,200 acres), Woodhawk (8,100 acres), portions of Cow Creek (12,460 acres) and Antelope Creek (2,750 acres) in the Lewistown District and Musselshell Breaks (8,650 acres), Bridge Coulee (5,900 acres), Billy Creek (3,450 acres), portions of Seven Blackfoot (14,540 acres) and Terry Badlands (14,430 acres), in the Miles City District.

The no wilderness alternative was recommended for a total of 90,430 acres.

MAJOR ENVIRONMENTAL CONSEQUENCES OF THE STUDY RECOMMENDATIONS

Recreation

Primitive non-motorized recreational opportunities would be preserved or enhanced on 79,770 acres which would be closed to motorized vehicles. Approximately 48 miles of vehicle ways and 79,770 acres would be closed, creating some negative impact to motorized recreational use. Recreational use is not expected to increase in designated areas over present low levels.

Wildlife

Wilderness could provide some benefits to wildlife by providing a secure area and protecting habitat. On the other hand large blocks of land with limited hunting access could reduce the effectiveness of hunting as a game management tool.

Livestock Grazing

There would be no change in stocking levels on the 79,770 acres recommended for wilderness. There could be minor additional costs to operators due to restrictions of motorized vehicle use.

Minerals

Opportunities for exploration or development of oil and/or natural gas reserves could be restricted or foregone in areas recommended for wilderness. Natural gas potential is rated high on 31,190 acres of the 79,770 recommended for wilderness designation. Approximately 43,500 acres with high potential would be available for exploration and/or development in areas not recommended as suitable.

Social and Economic Considerations

The potential loss of revenues from mineral reserves foregone cannot be calculated from information presently available. On a worst case basis in Blaine County, where the major natural gas development has occurred, a potential loss of .15% of present tax revenues would be lost.

According to some lenders in the affected area, the value of ranches with BLM grazing permits for long-term loan purposes would be reduced if their permitted area became wilderness.

Wilderness

Five areas containing 79,770 acres would become part of the NWPS. These areas all include outstanding opportunities for solitude, diverse recreational opportunities and excellent scenery. All five areas are in the grama/needlegrass/wheatgrass ecotype subgroup and their inclusion would add to the quality and diversity of the system. The addition of the Antelope Creek and Seven Blackfoot WSAs would add to the physiographic continuity of study units in the Charles M. Russell National Wildlife Refuge.

In the areas not recommended suitable, there is some potential for long-term loss of wilderness quality, primarily from oil and natural gas development. In almost all cases, change should come slowly. Four WSAs not recommended for wilderness contain portions of the Upper Missouri National Wild and Scenic River Corridor. Lands in this corridor will be managed to preserve their wild character.

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ONE INTRODUCTION

PURPOSE AND NEED

The *Missouri Breaks Wilderness Suitability Study / Environmental Impact Statement (EIS)* is in response to Section 603 of the Federal Land Policy and Management Act (FLPMA) of October 21, 1976. This law directed the Bureau of Land Management (BLM) to inventory, study and then report to Congress through the Secretary of the Interior and the President, the public lands suitable for inclusion in the National Wilderness Preservation System (NWPS).

BLM has set the end of fiscal year 1987 for completing wilderness studies and reporting wilderness suitability to the Secretary of the Interior. This document completes the study requirements for 12 of the 47 wilderness study areas in Montana. FLPMA then requires the Secretary by October 21, 1991 to report his recommendations to the President. The President has until October 21, 1993 to send the recommendations to Congress, as only Congress can designate any of the study areas as wilderness.

The purpose of this Suitability Study/EIS is twofold. The first is to analyze the effects on present or potential resource uses of inclusion of up to 12 wilderness study areas located in central and eastern Montana into the NWPS. The second is to make recommendations to the Secretary of the Interior on inclusion according to the findings of this document.

The study was conducted in accordance with BLM planning regulations (43 CFR 1601) which provides for the issuance of national policy and procedural guidance. BLM's *Draft Wilderness Study Policy* (*Federal Register*, 45:246, Dec. 19, 1980) serves this purpose. The policy establishes procedures to ensure that suitability recommendations are: (1) based on full consideration of all multiple resource values of public lands, (2) consistent with established national policy and (3) that all interested and affected members of the public and state and local governments are made aware of the study and given adequate opportunity to comment and otherwise be involved in the study process.

As the format of this Suitability Study/EIS was designed and the study initiated prior to the release of BLM's *Final Wilderness Study Policy*, the *Draft Wilderness Study Policy* has been used to guide the project.

SETTING

The wilderness study areas (WSAs) considered in this document are in the northern Great Plains in central and eastern Montana. The Dog Creek South, Woodhawk, Stafford, Ervin Ridge, Cow Creek, Antelope Creek and Burnt Lodge WSAs are in the BLM's Lewistown District, while Bridge Coulee, Musselshell Breaks, Seven Blackfoot, Billy Creek and Terry Badlands are in the Miles City District. There are a total of 170,200 acres of public lands in these 12 WSAs in Fergus, Blaine, Phillips, Valley, Garfield and Prairie Counties (see Figure 1.1).

All WSAs except the Terry Badlands are in the deeply eroded Missouri River Basin. The Bridge Coulee and Musselshell Breaks WSAs are situated along the Musselshell River, approximately 8 and 15 miles respectively from the confluence of the Musselshell and Missouri. The Terry Badlands is in the Yellowstone River Drainage Basin just north of Terry in eastern Montana.

Six of the WSAs—Dog Creek South, Woodhawk, Stafford, Ervin Ridge, Cow Creek and Antelope Creek—are immediately adjacent to a stretch of the Upper Missouri Wild and Scenic River, each containing a portion of the Wild and Scenic River Management Corridor (Figure 1.1). The Burnt Lodge, Seven Blackfoot, Billy Creek and Antelope Creek WSAs are contiguous with wilderness study areas in the Charles M. Russell National Wildlife Refuge (Figure 1.1).

Lewistown and Glasgow are the largest communities in counties with WSAs while Malta, Jordan, Winifred and Terry are smaller centers of population. All of the WSAs are within five hours driving time of both Great Falls and Billings, the largest cities in Montana.

PLANNING PROCESS

The 12 wilderness study areas are in 7 BLM planning units, covered by 5 management framework plans (MFPs) and 2 transition MFPs. The MFP makes coordinated land use allocations for all resources and establishes objectives and constraints for each resource and the activities that support it. Conflicts between resources are reconciled through analysis and discussion, including public comment. Each of the five MFPs contains more specific resource recommendations, decisions and trade-offs based on particular resource conditions. These 5 MFPs were updated in 1977. Comments from the public were sought for the updated MFPs by public meetings and open house sessions held in late 1977 and early 1978. Major MFP decisions affecting development of wilderness are included in Appendix 1.1.

Transition MFPs are plans that were in progress on September 6, 1979, when the BLM's new resource management plan process became effective. They follow the same process as MFPs. The *Jordan-North Rosebud Transition MFP* includes the Musselshell Breaks WSA while the *New Prairie Transition MFP* contains the Terry Badlands. These documents are completed through MFP Step 2, which recommends inclusion of the Musselshell Breaks and Terry Badlands WSAs in the National Wilderness Preservation System, depending on the analysis in this Suitability Study/EIS. The final MFP Step 3 recommendation (either recommending wilderness designation or not) will be arrived at through the findings of this document.

The five MFPs were all completed prior to completion of the wilderness inventory and require amending to include wilderness study areas and subsequent management decisions determined by Congress. This Suitability Study/EIS, in conjunction with Congressional action, will serve to amend the MFPs. It will not, however, include a management plan for any of the areas Congressionally designated as wilderness. A wilderness management plan will be developed based on any special wilderness management considerations incorporated by Congress. Those areas not designated will be returned to normal multiple use management without the constraints of BLM's *Wilderness Interim Management Policy*.

BLM Planning Regulations Sections 1601.8(b)(3) and 1601.6-3 detail MFP amendments. The regulations require that the amendment process use all the steps of the new resource management planning process (43 CFR 1601). The planning steps to be used in this document are:

1. Identification of issues
2. Development of planning criteria
3. Inventory data and information collection
4. Management situation analysis (present resources and management)
5. Formulation of alternatives
6. Estimation of the effects of alternatives
7. Selection of the preferred alternative (Draft Suitability Study/EIS)
8. Selection of resource management plan (Final Suitability Study/EIS)
9. Monitoring and evaluation

ISSUES

In November 1978, BLM began the wilderness review by preparing descriptions of those areas of 5,000 or more roadless acres of public lands and those areas of less than 5,000 acres contiguous to other wilderness or wilderness study areas. These wilderness study areas (WSAs) were reviewed by the public, closely inventoried by BLM and reviewed by BLM's Montana State Director in 1979-80. The State Director then released his final decision on the WSAs having the minimum characteristics of size, naturalness and outstanding opportunity for solitude and/or primitive recreation (*Final Decision: Montana Wilderness Inventory*, November 1980). The public was allowed to protest any of the final decisions.

Several protests were upheld by the State Director, resulting in changes that were announced to the public in March 1981. Some individuals, whose protests were denied, made formal appeals to the U.S. Department of the Interior Board of Land Appeals (IBLA). These appeals have yet to be heard, so this Suitability Report/EIS may require amending later if the IBLA's decisions affect any of the WSAs in this document. Specifically, appeals were made to completely drop the Dog Creek South, Woodhawk, Cow Creek, Ervin Ridge and Antelope Creek WSAs. The Stafford, Ervin Ridge and Cow Creek WSAs were appealed, both to add areas previously dropped as well as to totally drop these areas from further study. (See Appendix 1.2 for a list of all appealed areas and a history of the wilderness review process to date.)

Throughout the inventory stage of the wilderness review, the public has had opportunities to attend meetings, open houses or other informal meetings, in addition to letting BLM know of their concerns in writing. From this open forum, a number of issues have been brought forth.

The wilderness issue has divided public opinion in the Lewistown District, most ranchers and local residents being strongly opposed, while a number of state and national wilderness advocacy groups are strongly in favor of wilderness designation for the Missouri River Breaks area. These attitudes are detailed in the "Local Attitudes Towards Wilderness Designation" section of the "Social and Economic Conditions," Chapter 3.

All issues were sent to the public as a first step in the study process (Appendix 1.3). Many responses were registered either agreeing or disagreeing with, or restating previously determined issues. Each of the issues will be considered in this document in these categories:

Livestock Grazing—Concerns were stated that wilderness would reduce or eliminate grazing on public lands.

Mineral Development—The possible elimination or reduction of opportunities to explore and or produce oil and gas in areas of high potential was a major concern.

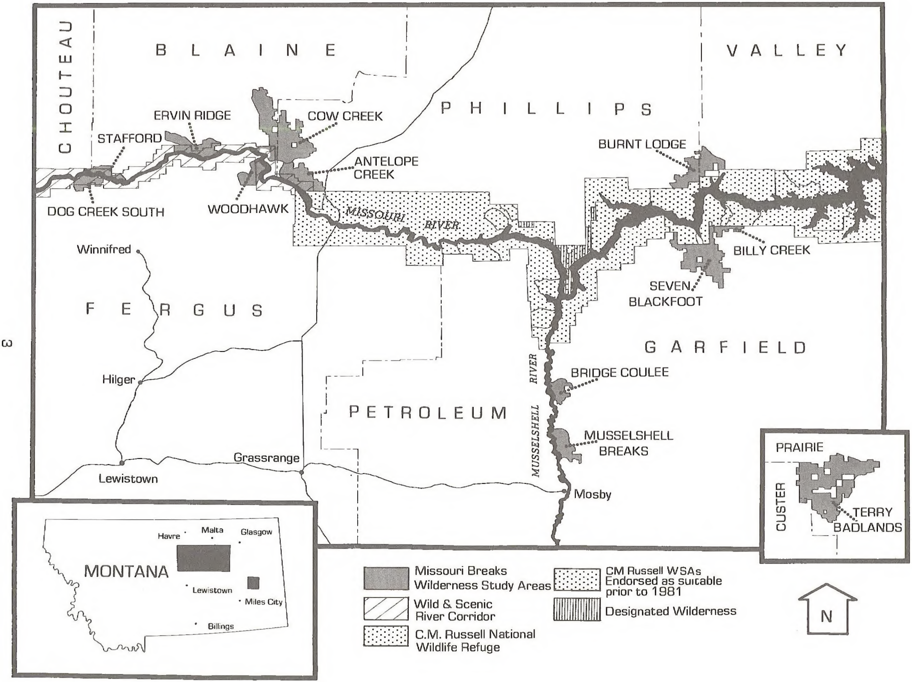

CHOUTEAU
BLAINE
VALLEY
PHILLIPS
FERGUS
PETROLEUM
GARFIELD
ERVIN RIDGE
STAFFORD
COW CREEK
ANTELOPE CREEK
DOG CREEK SOUTH
WOODHAWK
MISSOURI RIVER
BURNT LODGE
BILLY CREEK
SEVEN BLACKFOOT
BRIDGE COULEE
MUSSELSHELL BREAKS
MUSSELSHELL RIVER
Winnifred
Hilger
Lewistown
Grassrange
Mosby
PRAIRIE
CUSTER
TERRY BADLANDS
MONTANA
Havre
Malta
Glasgow
Lewistown
Miles City
Billings
Missouri Breaks Wilderness Study Areas
Wild & Scenic River Corridor
C.M. Russell National Wildlife Refuge
CM Russell WSAs Endorsed as suitable prior to 1981
Designated Wilderness
N

FIGURE 1.1 LOCATION MAP — MISSOURI BREAKS WILDERNESS STUDY AREA

Recreation Use and Opportunities—Concerns here included the elimination of vehicles for hunting and other off-road use, restricted access for older people who could not walk the areas or ride horseback, the lack of drinking water and the increased cost of using the areas by recreationists. Advantages expressed included that wilderness would preserve an area for solitude and undeveloped outdoor recreation, that the high scenic value of the WSAs would be preserved and significant cultural and historic areas would be better preserved under wilderness designation.

Wildlife Management—It was feared that wilderness designation would change the density and composition of wildlife, and that predators would not be controlled and would spread to adjacent private lands.

Fire Management—There was a fear that normal fire fighting techniques would not be used in WSAs or that they would be left to burn to preserve wilderness quality. This could threaten nearby private lands.

Social and Economic Changes—Concerns were expressed that there would be reductions in grazing income, reductions in the tax base for local counties because of less oil and gas development and reduced loan or resale value of ranches which have grazing permits in WSAs.

Range Management—The inability to manage livestock, repair reservoirs and fences and other facilities with the use of motorized vehicles was a concern. Some also feared that there would be no control of noxious weeds and predators should an area be designated wilderness. The local ranch public also fears that no new water sources or other range improvements would be permitted in WSAs.

Manageability—Concerns expressed included the size and shape of WSAs, the limited access, offsite activities on private or other public lands, private and state inholdings and valid existing rights. The "cherry-stemmed" roads (see Glossary) located in several units were also a major concern.

Wilderness Need—Those favoring wilderness stated that the Missouri Breaks are a unique ecotype and would add diversity to the National Wilderness Preservation System. Those opposed to wilderness stated that much of the land would remain unchanged despite designation. Opposition groups also pointed out that much of the land is already within the protected Upper Missouri Wild and Scenic River Management Corridor, so that it is currently being protected. Many felt too much of Montana's land is already designated wilderness.

Wilderness Quality—Those favoring wilderness designation stated that the Missouri Breaks have high quality scenery and are historically significant areas. Those opposed say the areas are too small and unmanageable. They also stated that the areas are not natural, having numerous signs of past human use.

Water Resources—Those opposed to wilderness stated that there is no drinking water in any of the WSAs. Those favoring wilderness, said designation would protect watersheds and eliminate erosion from roads.

PLANNING CRITERIA

In order to respond to each of the issues listed above, nine national planning criteria or guidelines for evaluating public concerns, were developed by BLM. These nine national planning criteria are:

1. BLM will determine what resource values are present and whether or not any of those values would be lost through wilderness designation. The analysis must show that multiple resource benefits and intrinsic wilderness values, balance resource uses lost over the long term. The interdisciplinary team approach will be used to accomplish this objective.
2. The involvement of the public will be solicited throughout the process. Resource specialists will consult with affected public land users such as ranchers, oil and gas interests, recreationists and wilderness users. Once alternatives are developed (including the preferred alternative), a draft study report will be released and public comments will be fully considered before a final decision is made.
3. Whenever possible, resource values will be analyzed by their economic effects on local communities. Local and national attitudes concerning wilderness designation will also be considered.
4. Energy and other mineral resource values have a significant impact on the wilderness suitability of WSAs. Current information on geological structures, advice from the minerals industry and evaluations by U.S. Geological Survey and the U.S. Bureau of Mines will all be used in determining the effects of wilderness designation on the supply of minerals.
5. Alternatives will be as consistent as possible with BLM's or other Federal agencies' plans, policies or programs as well as state and local resource use plans that may be affected.
6. The study will consider the loss of resource uses if an area is designated as wilderness.
7. The loss of the present wilderness values if an area is not designated will also be considered.
8. All WSAs have been evaluated and found to contain the minimum characteristics to qualify for further wilderness study. The decision on suitability requires consideration of whether or not wilderness quality exceeds the minimum. Access, valid pre-existing rights, size and proximity of offsite impacts will be carefully considered.
9. The study team will consider how a particular WSA would increase the diversity of the National Wilderness Preservation System and how the additional land would enhance the overall system.

TWO ALTERNATIVES

Chapter 2 describes the alternatives considered for each of the 12 wilderness study areas. This chapter includes the preferred alternatives, a summary of the impacts considered in their selection and the cumulative impacts of the preferred alternatives which will discuss overall resource and social-economic consequences. An analysis of the effects of these alternatives, by WSA, is found in Chapter 4.

DEVELOPMENT OF THE ALTERNATIVES

Two alternatives must be considered for each of the wilderness study areas because of the Council of Environmental Quality's (CEQ) regulation 1502.14 and requirements of the BLM's *Draft Wilderness Study Policy*. They are:

> The All Wilderness Alternative which recommends the entire WSA as suitable for wilderness designation, and
>
> The No Wilderness Alternative which recommends no part of a WSA as suitable for wilderness designation. If Congress selects this alternative, multiple use management would continue without any wilderness constraints.

One or more partial wilderness alternatives are also considered for certain WSAs.

Partial wilderness alternatives allow portions of a unit to be recommended either suitable or unsuitable. Two guidelines were used to arrive at the partial wilderness alternatives: (1) to resolve conflicts between wilderness and other resource uses and (2) to improve the long-term wilderness manageability of the units.

Resource conflicts would arise when other uses reduce opportunities for solitude or primitive recreation or impair natural values. The manageability of a study area is affected by locations and types of inholdings, valid existing rights, presence of cherry-stemmed or other segmenting roads, presence of identifiable boundaries, the potential to remove unneeded manmade features and the type and location of outside influences.

Eight of the WSAs are roadless, while four areas—Antelope Creek, Seven Blackfoot, Billy Creek and Terry Badlands—are segmented by roads. These separate parts are either large enough (i.e. 5,000 acres or more) to be considered on their own merits as wilderness, or are less than 5,000 acres, but contiguous with study units in the Charles M. Russell National Wildlife Refuge (CMR). Separate alternatives were developed to consider these parts, except where resource conflicts or management considerations made this infeasible.

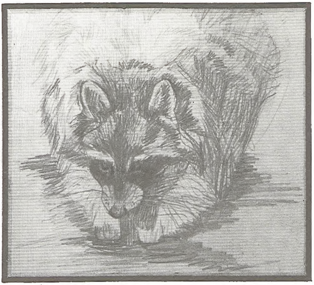
The 12 study areas are described in one of the following documents: the BLM State Director's *Final Decision: Montana Wilderness Inventory* for the Dog Creek South, Stafford, Ervin Ridge, Cow Creek, Burnt Lodge, Seven Blackfoot, Billy Creek, Bridge Coulee and Musselshell Breaks WSAs, the accelerated inventory for the Northern Tier Pipeline for Terry Badlands (May 1979) and the State Director's Protest Decision of March 1981 for the Antelope Creek and Woodhawk WSAs. In several of the WSAs there were minor errors in boundary locations which have been corrected. The acreage contained in several of the study areas has also changed slightly, based on a closer calculation. None of the changes resulted in new alternatives. Legal descriptions of the WSAs are in Appendix 2.1.

ALTERNATIVES CONSIDERED BUT NOT RECOMMENDED FOR DETAILED STUDY

Several other alternatives were discussed, and then eliminated from detailed study since they either did not meet the criterion of improving manageability or did not eliminate potential resource conflicts.

Six WSAs contain lands within the Upper Missouri Wild and Scenic River Management Corridor (see Table 3.9). Partial wilderness alternatives recommending just these lands as suitable for wilderness were considered. These partial wilderness alternatives would have significantly reduced the size of these WSAs to a point too small to be effectively managed as wilderness. Of these areas, only Ervin Ridge has over 5,000 acres within the management corridor. In several of the WSAs there are clearly public lands outside the river corridor which are necessary to form manageable boundaries, provide access and create an area large enough to ensure opportunities for solitude and primitive recreation. The river management corridor was designated for multiple use. There are no provisions in BLM's *Upper Missouri Wild and Scenic River Management Plan* to manage the corridor as wilderness. Resource uses which could conflict with wilderness, such as motor vehicle use, are allowed. The All Wilderness and No Wilderness Alternatives will consider the special management of the river corridor and analyze any benefits or disadvantages the river has on wilderness designation.

The EIS Team considered grouping WSAs into some logical block for analysis. The potential advantage from grouping would be the consideration of a larger block of land of similar physiographic characteristics. These combinations were considered: Dog Creek South and Stafford; Cow Creek, Antelope Creek, and Woodhawk; and Seven Blackfoot and Billy Creek. These WSAs are separated from others in their groups by state land (the Missouri Riverbed), private land and roads. No resource conflicts would be eliminated through the grouping of the units and manageability would be more difficult with the ownership conflicts. Since the *Draft Wilderness Study Policy* states that each WSA must be considered on its own merits, the idea of grouping was dropped. The cumulative effects of all suitable and unsuitable areas, however, will consider the overall advantages or disadvantages of larger blocks of land.



DESCRIPTION OF THE ALTERNATIVES

Dog Creek South

Two alternatives were developed for this wilderness study area. The All Wilderness Alternative recommends the entire 5,150 acres be designated wilderness (see Figure 2.1).

The No Wilderness Alternative recommends that none of the unit be designated.

Stafford

There are also two alternatives for this study area. The All Wilderness Alternative recommends the entire 4,800 acres be designated wilderness (see Figure 2.2).

The No Wilderness Alternative recommends that none of the WSA be designated.

Ervin Ridge

There are two alternatives for this study area. The All Wilderness Alternative recommends the entire 10,200 acres of this WSA be designated wilderness (see Figure 2.3).

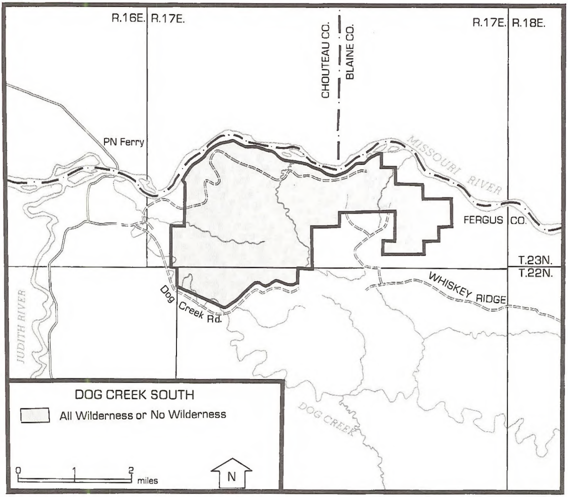
The No Wilderness Alternative recommends that none of the study area be designated.

Woodhawk

There are two alternatives for this study area. The All Wilderness Alternative recommends the entire 8,100 acres of the WSA be designated wilderness (see Figure 2.4).

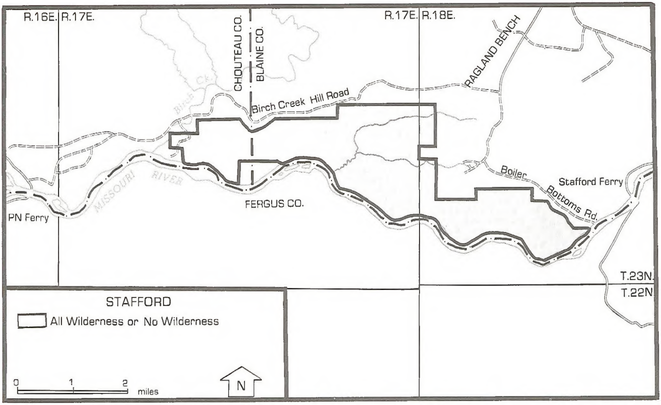
The No Wilderness Alternative recommends that none of the unit be designated.

FIGURE 2.1 DOG CREEK SOUTH (MT-068-244) ALTERNATIVES MAP


R.16E.
R.17E.
CHOUTEAU CO.
BLAINE CO.
R.17E.
R.18E.
PN Ferry
MISSOURI RIVER
FERGUS CO.
T.23N.
T.22N.
WHISKEY RIDGE
Dog Creek Rd.
JUDITH RIVER
DOG CREEK
DOG CREEK SOUTH
All Wilderness or No Wilderness
0
1
2
miles
N

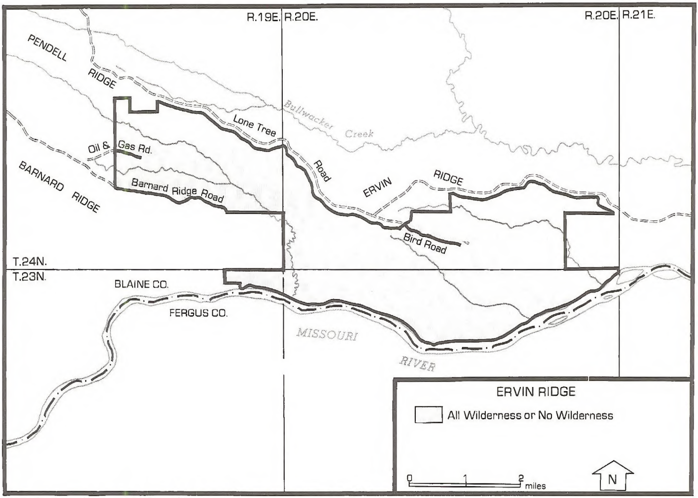
PREFERRED ALTERNATIVE — No Wilderness

FIGURE 2.2 STAFFORD (MT-066-250) ALTERNATIVES MAP


R.16E.
R.17E.
CHOUTEAU CO.
BLAINE CO.
R.17E.
R.18E.
RAGLAND BENCH
Birch Ck.
Birch Creek Hill Road
MISSOURI RIVER
Boiler Bottoms Rd.
Stafford Ferry
FERGUS CO.
PN Ferry
T.23N.
T.22N.
STAFFORD
All Wilderness or No Wilderness
0
1
2
miles
N

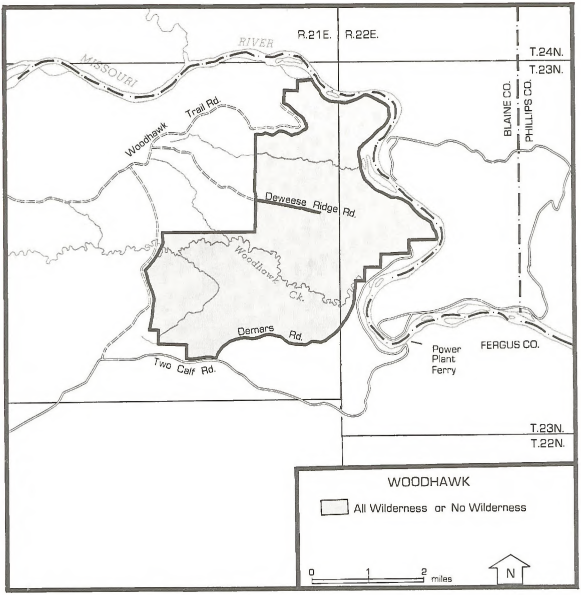
PREFERRED ALTERNATIVE — No Wilderness

FIGURE 2.3 ERVIN RIDGE (MT-066-253) ALTERNATIVES MAP


R.19E.
R.20E.
R.20E.
R.21E.
PENDELL RIDGE
Lone Tree Road
Bullwacker Creek
Oil & Gas Rd.
BARNARD RIDGE
Barnard Ridge Road
ERVIN RIDGE
Bird Road
T.24N.
T.23N.
BLAINE CO.
FERGUS CO.
MISSOURI RIVER
ERVIN RIDGE
☐ All Wilderness or No Wilderness
0
1
2
miles
N

PREFERRED ALTERNATIVE — No Wilderness

FIGURE 2.4 WOODHAWK (MT-068-246) ALTERNATIVES MAP


R.21E.
R.22E.
T.24N.
T.23N.
MISSOURI RIVER
BLAINE CO.
PHILLIPS CO.
Woodhawk Trail Rd.
Deweese Ridge Rd.
Woodhawk Ck.
Demars Rd.
Two Calf Rd.
Power Plant Ferry
FERGUS CO.
T.23N.
T.22N.
WOODHAWK
All Wilderness or No Wilderness
0
1
2
miles
N

PREFERRED ALTERNATIVE — No Wilderness

Cow Creek

Three alternatives were developed for this WSA (see Figure 2.5). The All Wilderness Alternative recommends the entire 34,050-acre study area be designated wilderness.

A partial wilderness alternative recommends designation of 21,590 acres as wilderness. This alternative eliminates four parts of the WSA. The first proposed boundary modification of 5,650 acres is located north of Section 25, T. 25 N., R. 21 E., and north of Sections 28, 29 and 30 of T. 25 N., R. 22 E. A cherry-stemmed road follows Squaw Creek Ridge. The area east of this ridge road is impacted by a permanent homesite and readily visible farmland outside the WSA. The deleted area also has eight vehicle ways totaling five miles. Opportunities for solitude are affected both by the improvements and by the cherry-stemmed road which bisects this parcel. Also, the erratic northern border of the parcel creates an unmanageable boundary. This area is of high interest to petroleum companies (who have drilled five holes within or near the boundary of this part of the WSA) and this boundary modification would reduce mineral resource conflicts.

The second proposed boundary modification is in T. 24 N., R. 23 E., Sections 5, 6, 7 and 8 and T. 25 N., R. 23 E., Section 31, consisting of 540 acres. This parcel is narrow and fairly flat and contains little screening vegetation. Structures inside the area include two reservoirs, a diversion dam, a powerline and three vehicle ways. Immediately adjacent offsite effects include a homesite and a regularly used road. This area is not apparently natural and does not contain outstanding opportunities for solitude.

The third proposed modification eliminates 5,600 acres located in the southeast corner of the WSA. The boundary is drawn along the road in T. 23 N., R. 22 E., Section 1 to the line between Sections 1 and 2 just east of Dead Cedar Reservoir. The boundary then proceeds north around state Section 16 to the road in NW¼ of the section, following this road to the original WSA boundary in T. 24 N., R. 23 E., Section 17. This area is connected to the main unit only by a half-mile wide strip of public lands, bounded by two roads and a state land section. The removal of three cherry-stemmed roads in this parcel would create an easily locatable and more manageable boundary. The roads in this segment receive regular vehicle use (primarily for hunting and range management) that reduce opportunities for solitude.

The fourth proposed modification of 660 acres is located in T. 23 N., R. 22 E., Sections 5 and 6, T. 23 N., R. 21 E., Section 1. This narrow strip of land is partially bounded by private land on the north and south and forms a narrow, congested boundary difficult to locate on the ground. This alternative eliminates a potential conflict with private landowners regarding access to private lands along Cow Creek.

The No Wilderness Alternative proposes that none of the unit be designated.

Antelope Creek

Four alternatives were developed for this WSA (see Figure 2.6). The All Wilderness Alternative recommends the entire 12,350 acres be designated wilderness. Although this area is identified as a single WSA by name and number, this alternative actually includes two roadless areas divided by a road.

The No Wilderness Alternative recommends none of the area for wilderness designation.

Partial Wilderness Alternative 1 recommends designation of a 9,600-acre parcel consisting of all land west of the road in (T. 23 N., R. 23 E., Sections 28 and 33). The 2,750 acres east of the road would not be recommended.

Partial Wilderness Alternative 2 proposes only the 2,750-acre parcel east of the road be designated as wilderness. This parcel is contiguous to the CMR's Antelope Creek study unit.

Bridge Coulee

There are two alternatives for this study area. The All Wilderness Alternative recommends the entire 5,900 acres of this WSA be designated wilderness (see Figure 2.7).

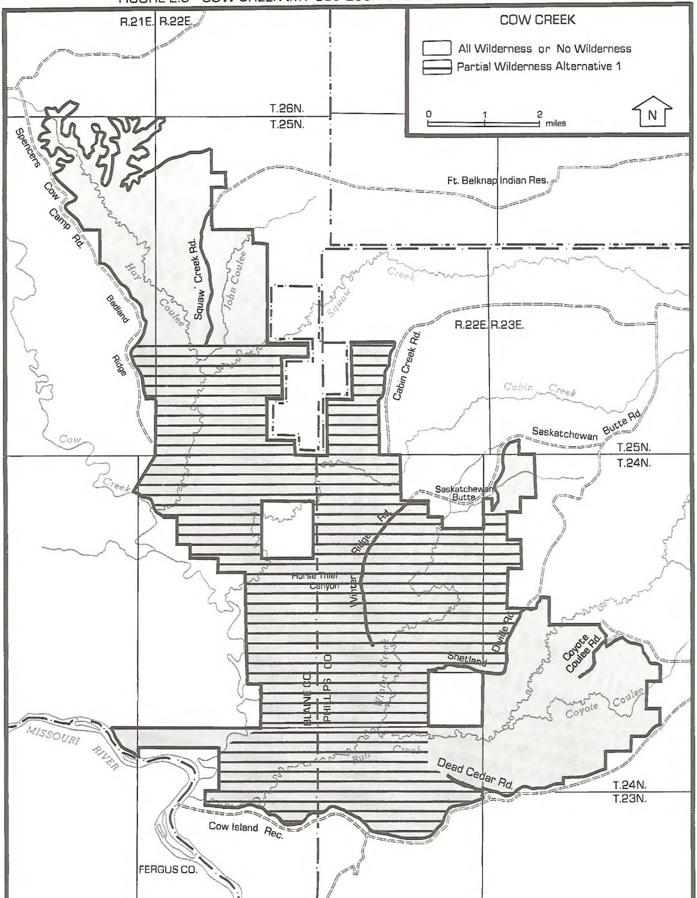
The No Wilderness Alternative recommends none of the study area be designated.

Musselshell Breaks

There are two alternatives for this study area. The All Wilderness Alternative recommends the entire 8,650 acres be designated (see Figure 2.8).

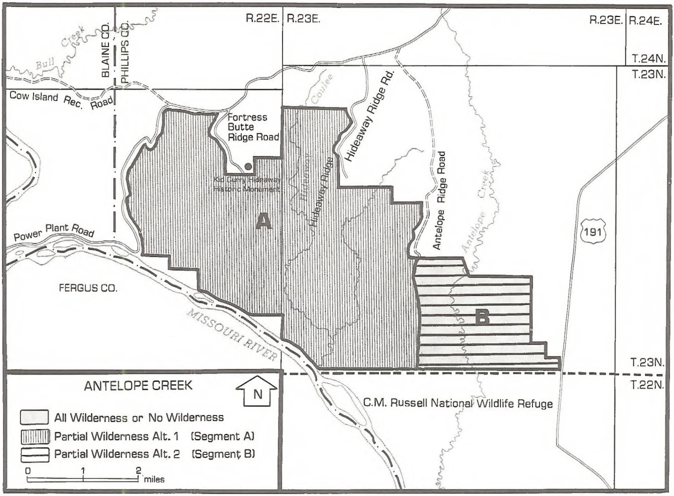
The No Wilderness Alternative recommends none of the unit be designated wilderness.

FIGURE 2.5 COW CREEK (MT-066-256) ALTERNATIVES MAP


COW CREEK
All Wilderness or No Wilderness
Partial Wilderness Alternative 1
0
1
2
miles
N
R.21E.
R.22E.
T.26N.
T.25N.
Spencers Cow Camp Rd.
Ft. Belknap Indian Res.
Squaw Creek Rd.
John Coulee
Hay Coulee
Badland Ridge
Squaw Creek
R.22E.
R.23E.
Cabin Creek Rd.
Cabin Creek
Saskatchewan Butte Rd.
T.25N.
T.24N.
Cow Creek
Saskatchewan Butte
Winter Ridge Rd.
Horse Thief Canyon
Shetland Divide Rd.
Coyote Coulee Rd.
Coyote Coulee
Winter Creek
BLAINE CO.
PHILLIPS CO.
MISSOURI RIVER
Bull Creek
Dead Cedar Rd.
T.24N.
T.23N.
Cow Island Rec.
FERGUS CO.

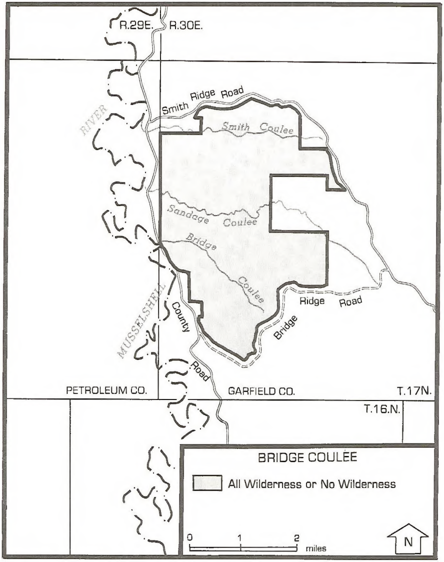
PREFERRED ALTERNATIVE — Partial Wilderness Alternative 1 (Segment A)

FIGURE 2.6 ANTELOPE CREEK (MT-065-266) ALTERNATIVES MAP


R.22E.
R.23E.
R.23E.
R.24E.
T.24N.
T.23N.
Bull Creek
BLAINE CO.
PHILLIPS CO.
Cow Island Rec. Road
Fortress Butte Ridge Road
Kid Curry Hideaway Historic Monument
Hideaway Coulee
Hideaway Ridge
Hideaway Ridge Rd.
Antelope Ridge Road
Antelope Creek
A
B
191
Power Plant Road
FERGUS CO.
MISSOURI RIVER
T.23N.
T.22N.
C.M. Russell National Wildlife Refuge
ANTELOPE CREEK
N
All Wilderness or No Wilderness
Partial Wilderness Alt. 1 (Segment A)
Partial Wilderness Alt. 2 (Segment B)
0
1
2
miles

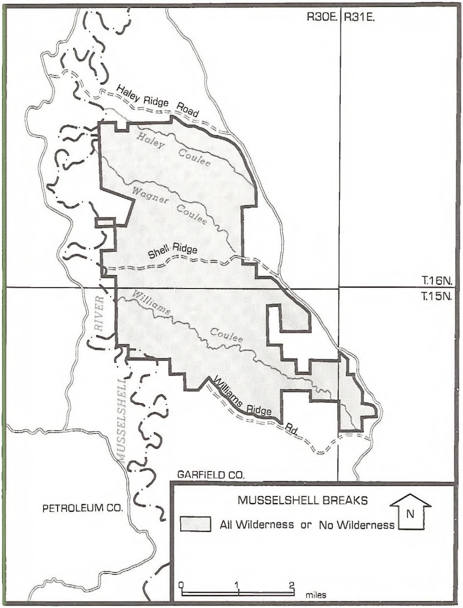
PREFERRED ALTERNATIVE — Partial Wilderness Alternative 1 (Segment A)

FIGURE 2.7 BRIDGE COULEE (MT-024-675) ALTERNATIVES MAP


R.29E.
R.30E.
Smith Ridge Road
RIVER
Smith Coulee
Sandage Coulee
Bridge Coulee
MUSSELSHELL
County Road
Ridge Road
Bridge
PETROLEUM CO.
GARFIELD CO.
T.17N.
T.16.N.
BRIDGE COULEE
All Wilderness or No Wilderness
0
1
2
miles
N

PREFERRED ALTERNATIVE — No Wilderness

FIGURE 2.8 MUSSELSHELL BREAKS (MT-024-677) ALTERNATIVES MAP


R30E.
R31E.
Haley Ridge Road
Haley Coulee
Wagner Coulee
Shell Ridge
T.16N.
T.15N.
Williams Coulee
RIVER
MUSSELSHELL
Williams Ridge Rd.
GARFIELD CO.
PETROLEUM CO.
MUSSELSHELL BREAKS
All Wilderness or No Wilderness
N
0
1
2
miles

PREFERRED ALTERNATIVE — No Wilderness

Billy Creek

Four alternatives were developed for the Billy Creek WSA (see Figure 2.9). The All Wilderness Alternative recommends the entire 3,450 acres be designated wilderness. Although this area is identified as a single WSA by name and number, this alternative actually includes four roadless areas divided by three roads. Each of the areas is a tack-on to the CMR's East Seven Blackfoot and/or Billy Creek study units.

Partial Wilderness Alternative 1 (Segment A on Figure 2.9) recommends the 1,650 acres in the westernmost portion of the WSA (T. 21 N., R. 34 E., Sections 4, 5, 8, 9 and 10) be designated wilderness. This parcel is bounded on the north by the CMR's East Seven Blackfoot study area and on the south by private land. The east and west boundaries are formed by roads.

Partial Wilderness Alternative 2 (Segment B on Figure 2.9) recommends the 550 acres east of Partial Wilderness Alternative 1 (T. 21 N., R. 34 E., Sections 2, 3 and 4) be designated as wilderness. This parcel is also bounded on the north by the CMR's East Seven Blackfoot study unit. Private land forms the southern boundary while the east and west boundaries are formed by roads.

The No Wilderness Alternative recommends that none of the unit be designated wilderness.

Seven Blackfoot

Five alternatives were developed for this WSA (see Figure 2.10). The All Wilderness Alternative recommends designation of the entire 20,250- acre unit. Although this area is identified as a single WSA by name and number, this alternative actually includes three roadless areas divided by two roads.

Partial Wilderness Alternative 1, (Segment A on Figure 2.10) recommends wilderness designation for a 1,160-acre tract located in the northwest corner of the unit. This tract is contiguous with CMR's West Seven Blackfoot WSA and is a physiographic extension of the Big Coulee Creek drainage from the refuge. This parcel excludes 2,790 acres of an unroaded area contiguous to CMR because of the proximity to an adjacent ranch. The regular presence of people, use of machinery, night lights and rancher travel on vehicle ways near the ranch and inside the WSA are long-term conflicts. Partial Wilderness Alternative 1 is bounded on the west and south by private land, and on the north by CMR. The east boundary is formed by a combination of the CMR and the rest of the Seven Blackfoot WSA.

Partial Wilderness Alternative 2 (Segment B, Figure 2.10) recommends wilderness designation for the 4,550-acre northeast segment. This parcel is bounded by CMR's East Seven Blackfoot WSA on its north and west sides while roads and private land form the other boundaries. The segment is being considered for wilderness designation because of its contiguity with the CMR study unit. Two small roadless tracts totaling 300 acres are not included in this alternative because they create an irregular boundary surrounded on 3 sides by private land.

Partial Wilderness Alternative 3 (Segment C, Figure 2.10) recommends wilderness designation for 11,450 acres in the southern half of the WSA. This segment is separated from the remainder of the WSA by a road. The south, east and west boundaries are formed primarily by private lands. A narrow extension of 420 acres (in T. 20 N., R. 34 E., Sections 1, 2, 11 and 12 and T. 20 N., R. 35 E., Section 7) has been excluded from this alternative since it's only ¼ mile wide along much of its length. It follows the course of a drainage which opens directly onto cultivated fields and a heavily used county road. The noise from activities on and around this road eliminates outstanding opportunities for solitude.

The No Wilderness Alternative recommends that none of the unit be designated wilderness.

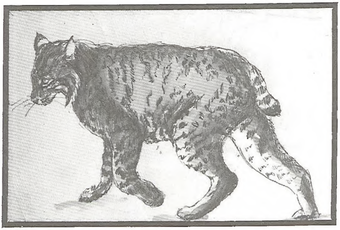
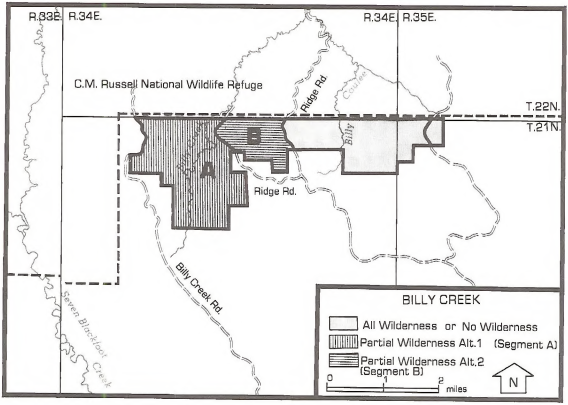
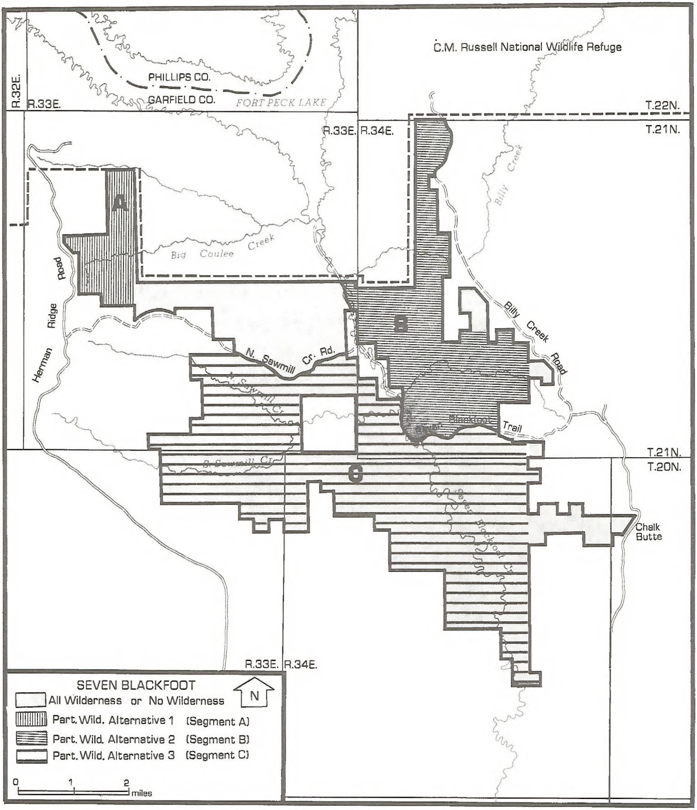


FIGURE 2.9 BILLY CREEK (MT-024-633) ALTERNATIVES MAP


R.33E.
R.34E.
R.34E.
R.35E.
C.M. Russell National Wildlife Refuge
Ridge Rd.
Billy
Coulee
T.22N.
T.21N.
B
A
Billy Creek
Ridge Rd.
Billy Creek Rd.
Seven Blackfoot Creek
BILLY CREEK
All Wilderness or No Wilderness
Partial Wilderness Alt.1 (Segment A)
Partial Wilderness Alt.2 (Segment B)
0
1
2
miles
N

PREFERRED ALTERNATIVE — No Wilderness

FIGURE 2.10 SEVEN BLACKFOOT (MT-024-657) ALTERNATIVES MAP


C.M. Russell National Wildlife Refuge
PHILLIPS CO.
GARFIELD CO.
FORT PECK LAKE
R.32E.
R.33E.
T.22N.
T.21N.
R.33E.
R.34E.
Billy Creek
Big Coulee Creek
A
Herman Ridge Road
B
N. Sawmill Cr. Rd.
Billy Creek Road
N. Sawmill Cr.
Seven Blackfoot Trail
T.21N.
T.20N.
S. Sawmill Cr.
C
Seven Blackfoot Cr.
Chalk Butte
R.33E.
R.34E.
SEVEN BLACKFOOT
N
All Wilderness or No Wilderness
Part. Wild. Alternative 1 (Segment A)
Part. Wild. Alternative 2 (Segment B)
Part. Wild. Alternative 3 (Segment C)
0
1
2
miles

PREFERRED ALTERNATIVE — Partial Wilderness Alternative 2 (Segments A & B)

Burnt Lodge

There are two alternatives for the Burnt Lodge WSA (see Figure 2.11). The All Wilderness Alternative recommends 13,850 acres be designated as wilderness. Section 21 of T. 23 N., R. 34 E., which was inadvertently included in the *Final Decision: Montana Wilderness Inventory* is not included in this alternative as it is not contiguous with the rest of the WSA.

During the study, a road was identified (T. 23 N., R. 33 E., Section 32) which provides access to a private inholding in the CMR. An area of 120 acres west of this access road has been eliminated in this alternative.

The No Wilderness Alternative recommends that none of the unit be designated wilderness.

Terry Badlands

Four alternatives were developed for the Terry Badlands WSA (see Figure 2.12). The All Wilderness Alternative recommends 43,450 acres be designated wilderness. Although this area is identified as a single WSA by name and number, this alternative actually includes two roadless areas divided by a road.

Partial Wilderness Alternative 1 (Segment A on Figure 2.12) recommends wilderness designation of the 15,170-acre tract in the northeast corner of the WSA. The Calypso Trail, along with private and state owned lands, separates this portion from other public lands in the unit. The 500-acre block in the extreme southern portion of the northeast corner is not included in this alternative. It is a small tract not contiguous with the remainder of the WSA because of the designation of the Calypso Trail as a road. North of this excluded 500-acre parcel, the boundary runs along state and privately-owned land.

Partial Wilderness Alternative 2 (Segments A and B) recommends wilderness designation of 29,020 acres. State and private lands form the boundaries of this alternative, except along the southwest border which is located on the allotment boundary, the most manageable and convenient dividing point.

The No Wilderness Alternative recommends that none of the unit be designated wilderness.

SELECTION OF PREFERRED ALTERNATIVES

The issues (see Chapter 1) were considered in detail in determining the affected resources and evaluating potential benefits or disadvantages of wilderness designation to these resources.

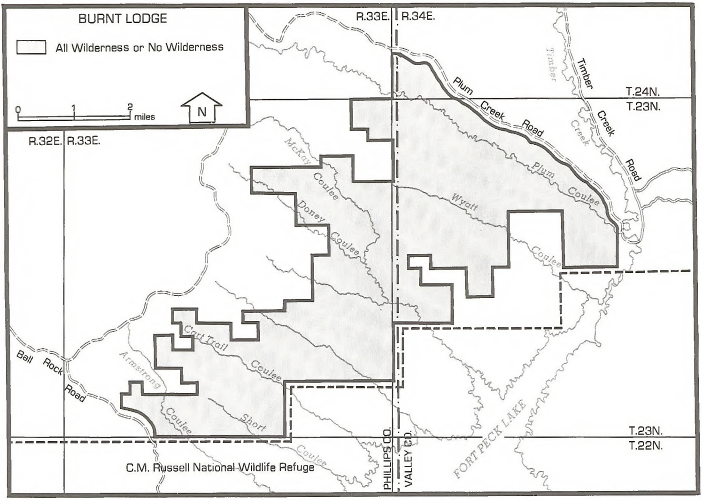
The effects of designation on each WSA are considered in detail in Chapter 4. Table 2.2 summarizes these impacts. From the evaluation of wilderness quality and these impacts the preferred alternatives were selected.

Table 2.1 is a summary of the preferred alternatives.

TABLE 2.1: SUMMARY OF THE PREFERRED ALTERNATIVES

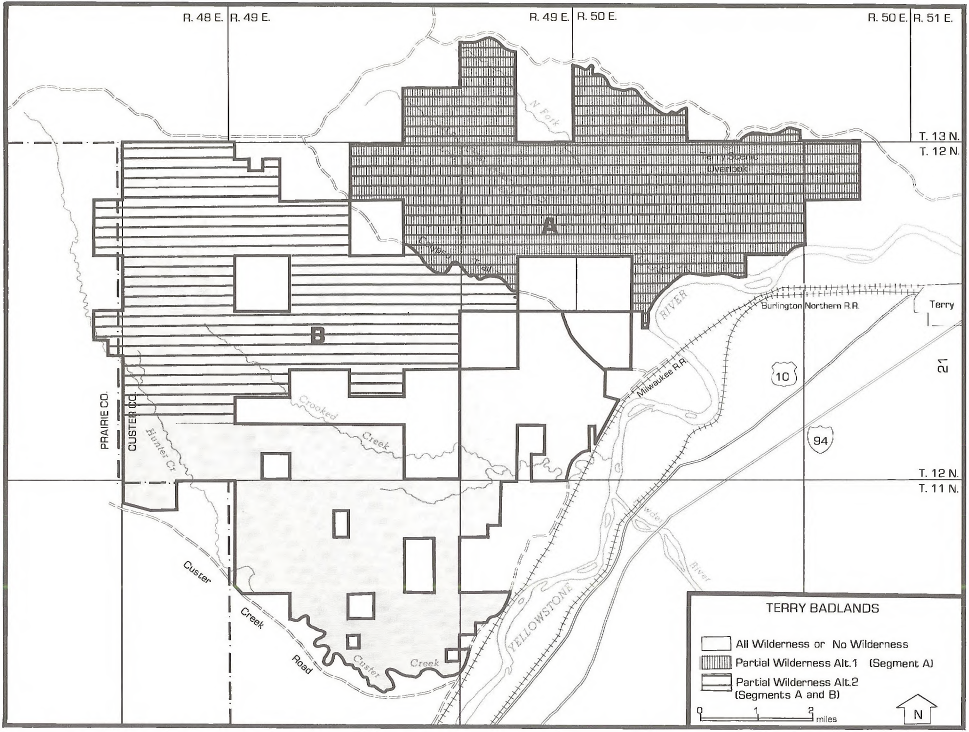
WSA	ACRES RECOMMENDED SUITABLE	ACRES RECOMMENDED NOT SUITABLE
Dog Creek South		5,150
Stafford		4,800
Ervin Ridge		10,200
Woodhawk		8,100
Cow Creek	21,590	12,460
Antelope Creek	9,600	2,750
Bridge Coulee		5,900
Musselshell Breaks		8,600
Billy Creek		3,450
Seven Blackfoot	5,710	14,540
Burnt Lodge	13,850	
Terry Badlands	29,020	14,430
TOTALS	79,770	90,430

FIGURE 2.11 BURNT LODGE (MT-065-278) ALTERNATIVES MAP


BURNT LODGE
All Wilderness or No Wilderness
0
1
2
miles
N
R.33E.
R.34E.
R.32E.
R.33E.
T.24N.
T.23N.
T.23N.
T.22N.
Plum Creek Road
Timber Creek Road
Timber Creek
Plum Coulee
Wyatt Coulee
McKay Coulee
Doney Coulee
Cart Trail Coulee
Armstrong Coulee
Short Coulee
Ball Rock Road
PHILLIPS CO.
VALLEY CO.
FORT PECK LAKE
C.M. Russell National Wildlife Refuge

PREFERRED ALTERNATIVE — All Wilderness

FIGURE 2.12 TERRY BADLANDS (MT-024-684) ALTERNATIVES MAP


R. 48 E.
R. 49 E.
R. 49 E.
R. 50 E.
R. 50 E.
R. 51 E.
T. 13 N.
T. 12 N.
T. 12 N.
T. 11 N.
N Fork
Terry Scenic Overlook
A
B
Calypso Trail
RIVER
Burlington Northern R.R.
Terry
Milwaukee R.R.
10
21
94
PRAIRIE CO.
CUSTER CO.
Hunter Cr.
Crooked Creek
Custer Creek Road
Custer Creek
YELLOWSTONE
Powder River
TERRY BADLANDS
All Wilderness or No Wilderness
Partial Wilderness Alt.1 (Segment A)
Partial Wilderness Alt.2 (Segments A and B)
0
1
2
miles
N

PREFERRED ALTERNATIVE — Partial Wilderness Alternative 1 & 2 (Segment A & B)

TABLE 2.2: IMPACTS SUMMARY

WSAs	CLIMATE/ AIR QUALITY TOPOGRAPHY/ GEOLOGY	CULTURAL RESOURCES	SOILS/WATERSHED	VEGETATION	MOTORIZED RECREATION	NONMOTORIZED RECREATION
DOG CREEK SOUTH						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage-eliminates ORV & most use of ways	Advantage - enhances opportunity for primitive recreation
NO WILDERNESS*	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
STAFFORD						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates ORV & most use of ways	Advantage - enhances opportunity for primitive recreation
NO WILDERNESS*	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
ERVIN RIDGE						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage-eliminates ORV & most use of ways	Advantage - enhances opportunity for primitive recreation
NO WILDERNESS*	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
WOODHAWK						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates ORV & most use of ways	Advantage - enhances opportunity for primitive recreation
NO WILDERNESS*	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
COW CREEK						
ALL WILDERNESS	No change	Protect sites. High supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates ORV & most use of ways	Advantage - enhances opportunity for primitive recreation
PARTIAL WILDERNESS ALTERNATIVE 1*	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness
NO WILDERNESS	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained

*Preferred alternative

WILDERNESS	WILDLIFE	LIVESTOCK MANAGEMENT	MINERALS	SOCIAL ATTITUDES	ECONOMIC IMPACTS	WSAs
						DOG CREEK SOUTH
Protection of small area with good solitude opportunities	Insignificant reduction in harvest rate	Insignificant disadvantage-proposed facilities built with mitigation.Restricted vehicle use a disadvantage	High potential gas may not be developed	Local attitude strongly against wilderness. National attitude split	Additional maintenance costs = $275 Potential loan value loss = $56,655	ALL WILDERNESS
Wild and Scenic river provides some protection	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Dissatisfaction by state & national environmental groups	Present condition maintained	NO WILDERNESS
						STAFFORD
Protection of very small area with good solitude opportunities	Insignificant reduction in harvest rate	Insignificant disadvantage. Restricted vehicle use a disadvantage	High potential gas may not be developed	Local attitude strongly against wilderness. National attitude split	Additional maintenance costs = $130 Potential loan value loss = $20,144	ALL WILDERNESS
Wild and Scenic river provides some protection	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Dissatisfaction by state & national environmental groups	Present condition maintained	NO WILDERNESS
						ERVIN RIDGE
Protection of medium size area with excellent solitude and good recreational opportunities	Insignificant reduction in harvest rate	Disadvantage-possible restrictions on large number of present & proposed range projects. Restricted vehicle use a disadvantage	High potential gas may not be developed	Local attitude strongly against wilderness. National attitude split	Additional maintenance costs = $240 Potential loan value loss = $66,727	ALL WILDERNESS
Wild and Scenic river provides some protection	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Dissatisfaction by state & national environmental groups	Present condition maintained	NO WILDERNESS
						WOODHAWK
Protection of small area with excellent solitude and good recreational opportunities	Insignificant reduction in harvest rate	Few proposed facilities. Maintenance & reconstruction of reservoirs potential impact. Restricted vehicle use adisadvantage	High potential gas may not be developed.	Local attitude strongly against wilderness. National attitude split	Additional maintenance costs = $85 Potential loan value loss = $88,130	ALL WILDERNESS
Wild and Scenic river provides some protection	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Dissatisfaction by state & national environmental groups	Present condition maintained	NO WILDERNESS
						COW CREEK
Protection of large area with outstanding solitude and good recreational opportunities	Potential for increase in mule deer	Many proposed facilities - significant impact. Restricted vehicle use a disadvantage	High potential gas may not be developed	Local attitude strongly against wilderness. National attitude split	Additional maintenance costs = $1,165 Potential loan value loss = $356,297	ALL WILDERNESS
Same and All Wilderness	Same as All Wilderness	Eliminates many conflicts by removal of project concentration areas	Less impact than All Wilderness as less acreage restricted	Same as All Wilderness	Additional maintenance costs = $564 Potential loan value loss = $225,361	PARTIAL WILDERNESS ALTERNATIVE 1
Wild and Scenic river provides some protection	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Dissatisfaction by state & national environmental groups	Present condition maintained	NO WILDERNESS

TABLE 2.2: IMPACTS SUMMARY CONTINUED

WSAs	CLIMATE/ AIR QUALITY TOPOGRAPHY/ GEOLOGY	CULTURAL RESOURCES	SOILS/WATERSHED	VEGETATION	MOTORIZED RECREATION	NONMOTORIZED RECREATION
ANTELOPE CREEK						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates DRV & most use of ways	Advantage - enhances opportunity for primitive recreation
PARTIAL WILDERNESS ALTERNATIVE 1*	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness
PARTIAL WILDERNESS ALTERNATIVE 2	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness
NO WILDERNESS	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
BRIDGE COULEE						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminate DRV & most use of ways	Advantage - enhances opportunity for primitive recreation
NO WILDERNESS*	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
MUSSELSHELL BREAKS						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates DRV & most use of ways	Advantage - enhances opportunity for primitive recreation
NO WILDERNESS*	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
BILLY CREEK						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates DRV & most use of ways	Advantage - enhances opportunity for primitive recreation
PARTIAL WILDERNESS ALTERNATIVE 1	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	No significant impact	Same as All Wilderness
PARTIAL WILDERNESS ALTERNATIVE 2	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	No significant impact	Same as All Wilderness
NO WILDERNESS*	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained

*Preferred alternative

WILDERNESS	WILDLIFE	LIVESTOCK MANAGEMENT	MINERALS	SOCIAL ATTITUDES	ECONOMIC IMPACTS	WSAs
						ANTELOPE CREEK
Protection for medium size area with outstanding solitude and diverse recreational opportunities	Potential for increase in mule deer if blocked with CMR	Few proposed facilities - limited impact. Restricted vehicle use major disadvantage.	High potential gas may not be developed	Local attitude strongly against wilderness. National attitude split	Additional maintenance costs = $530 Potential loan value loss = $107,015	ALL WILDERNESS
Protection for small area with some characteristics as All Wilderness	Same as All Wilderness	Same as All Wilderness. Slightly less restriction	Less acreage with restrictions to natural gas exploration	Same as All Wilderness	Additional maintenance costs = $490 Potential loan value loss = $83,094	PARTIAL WILDERNESS ALTERNATIVE 1
Wilderness protection for very small area	No change in wildlife density	Restricted use of vehicles only minor disadvantage	Restrictions on natural gas development limited to small area	Same as All Wilderness	Additional maintenance costs = $35 Potential loan value loss = $23,921	PARTIAL WILDERNESS ALTERNATIVE 2
Wild and Scenic river provides some protection	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Dissatisfaction by state & national environmental groups	Present condition maintained	NO WILDERNESS
						BRIDGE COULEE
Protection for small area with good solitude opportunities	Insignificant reduction in harvest rate	Many proposed facilities - major impact. Restricted vehicle use a disadvantage	Moderate potential gas may not be developed	Local attitude against wilderness. National attitude split	Additional maintenance costs = $145 Potential loan value loss = $70,504	ALL WILDERNESS
Very limited impact on natural values	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Little environmental group interest shown in this WSA	Present condition maintained	NO WILDERNESS
						MUSSELSHELL BREAKS
Protection for small area with very good solitude opportunities	Insignificant reduction in harvest rate	Many proposed facilities - major impact. Restricted vehicle use a disadvantage	Moderate potential oil & gas may not be developed	Local attitude against wilderness. National attitude split	Additional maintenance costs = $360 Potential loan value loss = $130,936	ALL WILDERNESS
Possible oil & gas development - minor impact on natural values	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Little environmental group interest shown in this WSA	Present condition maintained	NO WILDERNESS
						BILLY CREEK
Protection for four very small tack-ons with good to excellent solitude opportunities	Insignificant reduction in harvest rate	No proposed facilities. Restricted vehicle use a minor disadvantage	Moderate potential gas may not be developed	Local attitude against wilderness. National attitude split	Additional maintenance costs = $60 Potential loan value loss = $39,029	ALL WILDERNESS
Same as All Wilderness	Same as All Wilderness	No significant impact	Less area restricted	Same as All Wilderness	Additional maintenance costs = $0 Potential loan value loss = $18,885	PARTIAL WILDERNESS ALTERNATIVE 1
Same as All Wilderness	Same as All Wilderness	No significant impact	Small area restricted	Same as All Wilderness	Additional maintenance costs = $0 Potential loan value loss = $6,295	PARTIAL WILDERNESS ALTERNATIVE 2
Possible oil & gas development - no significant impact on natural values expected	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Little environmental group interest shown in this WSA	Present condition maintained	NO WILDERNESS

TABLE 2.2: IMPACTS SUMMARY CONTINUED

WSAs	CLIMATE/ AIR QUALITY TOPOGRAPHY/ GEOLOGY	CULTURAL RESOURCES	SOILS/WATERSHED	VEGETATION	MOTORIZED RECREATION	NONMOTORIZED RECREATION
SEVEN BLACKFOOT						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates ORV & most use of ways	Advantage - enhances opportunity for primitive recreation
PARTIAL WILDERNESS ALTERNATIVE 1*	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness
PARTIAL WILDERNESS ALTERNATIVE 2*	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness
PARTIAL WILDERNESS ALTERNATIVE 3	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness
NO WILDERNESS	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
BURNT LODGE						
ALL WILDERNESS*	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates ORV & most use of ways	Advantage - enhances opportunity for primitive recreation
NO WILDERNESS	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained
TERRY BADLANDS						
ALL WILDERNESS	No change	Protect sites. Supplemental value to wilderness	Limit surface disturbance	Fire & noxious weeds controlled as needed. Revegetation of trails	Disadvantage - eliminates ORV & most use of ways	Advantage - enhances opportunity for primitive recreation
PARTIAL WILDERNESS ALTERNATIVE 1	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness
PARTIAL WILDERNESS ALTERNATIVE 2*	No change	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness
NO WILDERNESS	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained	Present condition maintained

*Preferred alternative

WILDERNESS	WILDLIFE	LIVESTOCK MANAGEMENT	MINERALS	SOCIAL ATTITUDES	ECONOMIC IMPACTS	WSAs
						SEVEN BLACKFOOT
Protection for large area with outstanding solitude opportunities	Potential minor increase in mule deer if blocked with CMR study area	Few proposed facilities - limited impact. Restricted vehicle use is primary disadvantage	Moderate potential gas may not be developed	Local attitude against wilderness. National attitude split	Additional maintenance costs = $540 Potential loan value loss = $195,145	ALL WILDERNESS
Wilderness protection for very small area	No significant impact	No proposed facilities - no significant impact. Restricted vehicle use a minor disadvantage	Very small area. Minimal impact	Same as All Wilderness	Additional maintenance costs = $0 Potential loan value loss = $16,367	PARTIAL WILDERNESS ALTERNATIVE 1
Wilderness protection for very small area	No significant impact	Same as Partial Alternative 1	Very small area - minimal impact	Same as All Wilderness	Additional maintenance costs = $0 Potential loan value loss = $44,065	PARTIAL WILDERNESS ALTERNATIVE 2
Wilderness protection for medium sized area	No significant impact	Same as All Wilderness	Same as All Wilderness	Same as All Wilderness	Additional maintenance costs = $395 Potential loan value loss = $110,792	PARTIAL WILDERNESS ALTERNATIVE 3
Possible oil & gas development - limited impact expected on natural values	Present condition maintained	Present condition maintained	Present condition maintained	Local approval. Some dissatisfaction by environmental groups	Present condition maintained	NO WILDERNESS
						BURNT LODGE
Protection for large area with outstanding solitude and diverse recreation opportunities	Vehicle restriction could limit elk harvest. Potential increase in elk & mule deer.	Few proposed facilities - limited impact. Restricted vehicle use a minor disadvantage	Moderate potential gas may not be developed	Local attitude somewhat against wilderness. National attitude split	Additional maintenance costs = $660 Potential loan value loss = $211,512	ALL WILDERNESS
Possible oil & gas development - minor loss of natural values	Present condition maintained	Present condition maintained	Present condition maintained	Local population not strongly opposed but would approve dropping area. Dissatisfaction by environmental groups familiar with area	Present condition maintained	NO WILDERNESS
						TERRY BADLANDS
Protection for large area with outstanding solitude and diverse recreation opportunities	Vehicle restriction could limit deer harvest slightly	Few proposed facilities - limited impact. Restricted vehicle use a major disadvantage	Low potential gas & oil may not be developed. Moderate potential coal resource could not be developed	Local attitude somewhat against wilderness. National attitude split	Additional maintenance costs = $1,105 Potential loan value loss = $552,701	ALL WILDERNESS
Protection for medium size area with outstanding solitude	No significant impact	Little or no range conflicts	Low potential oil & gas may not be developed. No coal resource present	Local attitude somewhat for wilderness. National attitude split	Additional maintenance costs = $70 Potential loan value loss = $158,634	PARTIAL WILDERNESS ALTERNATIVE 1
Same as All Wilderness	No significant impact	Restricted vehicle use a disadvantage but less impact than All Wilderness	Same as Partial Wilderness Alternative 1	Local attitude slightly against wilderness. National attitude split	Additional maintenance costs = $576 Potential loan value loss = $352,520	PARTIAL WILDERNESS ALTERNATIVE 2
Possible coal development would mean loss of natural values in coal mined areas	Present condition maintained	Present condition maintained	Present condition maintained	Limited local approval. Dissatisfaction by environmental groups familiar with area	Present condition maintained	NO WILDERNESS

PREFERRED ALTERNATIVES

Dog Creek South

The Preferred Alternative for the Dog Creek South Wilderness Study Area is the No Wilderness Alternative.

The combination of low wilderness quality, high value for natural gas and potential for wilderness management conflicts govern the recommendation for this WSA.

The small size of this unit, combined with topography that opens to major offsite influences centered along the Missouri River bottoms and on the adjacent farmed benches, result in limited opportunities for outstanding solitude. The unit lacks outstanding primitive non-motorized recreation opportunities. Scenic quality would not be a significant supplemental value to wilderness as so many developed areas are within view. This WSA would not add outstanding quality or diversity to the NWPS.

BLM geologists have rated this WSA as having high potential for natural gas reserves. Development of pre-FLPMA oil and gas leases, with their inherent valid existing rights to explore and produce, could damage wilderness values, whether or not the WSA were designated. Long-term conflicts with the minerals industry could occur if this WSA were designated. Unexplored leases (either pre- or post-FLPMA) that expire after December 31, 1983, would not be re-issued under present laws. The industry would lose the future opportunity to explore and develop natural gas reserves. Selection of the Preferred Alternative would eliminate this potential conflict with the minerals industry. Without wilderness protection, some loss of wilderness values could result from natural gas development. In the short term this damage could occur regardless of the recommendation because so much acreage in this WSA contains pre-FLPMA leases.

Due to limited range improvement projects requiring maintenance and the few range developments proposed, there would not be significant impairment of natural values from range management activities with the preferred alternative. On the other hand, if this WSA were designated, impacts on grazing management would only be minimal.

Strong negative attitudes toward wilderness designation were balanced by support from those favoring designation. Local opinion against wilderness designation, however, could have a major influence on the manageability of the area. Wilderness designation would likely cause at least one adjacent rancher to close access to the unit through his land. The overall pattern of landownership would be an additional detriment to wilderness manageability. Adjacent privately-owned lands contain a number of homesites, irrigated farmland and roads. These developments are a source of disruption to solitude values during the spring, summer and fall, the main recreational use period. Further development of these adjacent lands would be outside the jurisdiction of the BLM.

The Upper Missouri Wild and Scenic River is a supplemental value to the area as it provides access and primitive recreation opportunities. The lands in this WSA included in the river management corridor have legislative protection for their natural values. These values would not be seriously threatened without the additional wilderness protection.

Stafford

The Preferred Alternative for the Stafford Wilderness Study Area is the No Wilderness Alternative.

The combination of low wilderness quality, high value for natural gas and potential for wilderness management conflicts govern the recommendation for this WSA.

This 4,800-acre WSA includes a long narrow strip of land between the Missouri River and the ridgetops overlooking the river. The small size, narrow width and drainages that open to the sights and sounds from adjacent farmed fields, two ferryboat operations and regularly used county roads reduce the quality of solitude available. Recreational opportunities are primarily limited to bankside use associated with river floats and overall opportunities are not outstanding. This WSA would not add outstanding quality or diversity to the NWPS.

BLM geologists have rated this WSA as having high potential for natural gas reserves. Development of pre-FLPMA leases, with their inherent valid existing rights to explore and produce, could damage wilderness values, whether or not the WSA were designated. Long-term conflicts with the minerals industry could occur if this WSA were designated. Leases (either pre- or post-FLPMA) that expire after December 31, 1983, would not be re-issued under present laws. The industry would lose the future opportunity to explore and develop natural gas reserves. Selection of the Preferred Alternative would eliminate this potential conflict with the minerals industry. Without wilderness protection, some loss of wilderness values could result from oil and gas development. In the short term this damage could occur regardless of the recommendation because so much acreage in this WSA contains pre-FLPMA leases.

With only one proposed project and few developments needing maintenance, the potential for damage to wilderness values from grazing management activities would be minimal with the preferred alternative. If this WSA were designated, impacts on grazing management would also be minimal.

Strong negative attitudes toward wilderness designation were balanced by support for this WSA by state and national groups favoring wilderness.

Vehicle access to Stafford is through private land. This creates the potential for conflicts with private landowners. There is good access available from the Missouri River. Because of the private ownership of most adjacent lands, there is potential for development outside the jurisdiction of the BLM which could affect wilderness values within the WSA.

The Upper Missouri Wild and Scenic River is a supplemental value to the area as it provides access and primitive recreation opportunities. The lands in the WSA included in the river management corridor have legislative protection for their natural values. These values would not be seriously threatened without the additional wilderness protection.

Ervin Ridge

The Preferred Alternative for the Ervin Ridge Wilderness Study Area is the No Wilderness Alternative.

Ervin Ridge contains several deep drainages where outstanding opportunities for solitude are available. There are also good opportunities for non-motorized recreation. Its supplemental features include excellent scenery. In spite of these values, however, resource conflicts and manageability concerns govern the recommendation for this unit.

Parts of Ervin Ridge are included in two undefined KGSs (see Minerals, Chapter 3) and there have been gas discoveries just adjacent to the area, the potential for long-term conflicts from gas development is greater in this WSA than in any other in this study. Twenty percent of the unit is in leases held by production from wells outside the WSA's boundaries. Those leases will not expire as long as production is maintained. BLM has minimal control over further exploration and development of those leases.

The area has been rated by BLM geologists as having high potential for natural gas reserves. On the pre-FLPMA leases in the WSA, there would be potential for the loss of some wilderness values from work on these leases. These leases have inherent rights to explore and develop and impacts on wilderness values could occur whether or not the WSA was designated as wilderness. Post-FLPMA leaseholders could be impacted in the short term (the life of the lease) as only exploration or development work that would not damage wilderness values would be allowed. Long-term conflicts with the minerals industry could occur if this WSA were designated. Leases (either pre- or post-FLPMA) that expire after December 31, 1983, would not be re-issued under present laws. The industry would lose the future opportunity to explore for and develop natural gas reserves. The Preferred Alternative would eliminate both the potential conflicts with post-FLPMA leaseholders and long-term conflicts from no leasing in designated wilderness.

There are nine mining claims on possible diamond-bearing formations. Although exploration costs are high and BLM estimates probability for discovery low, the Preferred Alternative would remove any possible conflicts with the claimholders. The mining of the claims could cause some loss of wilderness values but the probability for mining is low.

Considerable range development has already occurred in the unit and a substantial number of additional projects, including 2 miles of water pipeline, eight water developments and 2 miles of fence are planned. Restrictions on placement of new projects and reduced use of vehicle ways with the All Wilderness Alternative could result in a moderate to high overall impact on affected permittees. The Preferred Alternative would eliminate possible conflicts with construction or placement of range projects. If and when constructed, the projects could result in some loss of wilderness values. Abundant screening in some parts of the WSA would reduce the impact.

Strong negative local attitudes toward wilderness designation were balanced by support from groups favoring wilderness.

Most of the WSA is surrounded by undeveloped public lands that reduce offsite impacts. However, offsite farms and the traffic along the boundary roads still adversely influence wilderness values in portions of the unit. The western ends of both access roads are in private control which could create a long-term potential management problem if the area were designated.

The Upper Missouri Wild and Scenic River is a supplemental value to the area as it provides access and primitive recreation opportunities. The lands in this WSA included in the river management corridor have legislative protection for their natural values. Those values would not be seriously threatened without the additional wilderness protection.

Woodhawk

The Preferred Alternative for the Woodhawk Wilderness Study Area is the No Wilderness Alternative.

Some outstanding opportunities for solitude and good primitive recreation opportunities are available in this unit. Excellent scenery is a supplemental value of this WSA. However, the small size, the central location of a cherry-stemmed road and several resource conflicts combine to outweigh the wilderness values.

This WSA has been rated by BLM geologists to have high potential for natural gas reserves. The majority of oil and gas leases in this WSA are post-FLPMA. Post FLPMA leaseholders could be impacted in the short term (the life of the lease) as any exploration or development work that would damage wilderness values would not be allowed. Long-term conflicts with the minerals industry would be highly probable if this WSA were designated. Unexplored leases (either pre- or post-FLPMA) that expire after December 31, 1983, would not be re-issued under present laws. The industry would lose the future opportunity to explore for and develop natural gas reserves. The Preferred Alternative would eliminate both the potential conflicts with post-FLPMA leaseholders and the long-term conflict over no leasing in designated wilderness.

Eleven closely grouped reservoirs, many of them older, will need maintenance, reconstruction or replacement in the near future. The long-term protection of wilderness values could limit new access ways and other surface disturbances associated with project construction. With the preferred alternative, conflicts with development of range projects would not occur. There could be some loss of wilderness values from project construction and associated access ways but significant losses would not occur.

Strong local opposition to designation is balanced by state and national groups favoring wilderness.

The Upper Missouri Wild and Scenic River is a supplemental value to the area as it provides access and primitive recreation opportunities. The lands in this WSA included in the river management corridor have legislative protection for their natural values. Those values would not be seriously threatened without the additional wilderness protection.

Access to this WSA is primarily controlled by the BLM. The access into the center of the unit via the cherry-stemmed road would be a major management problem. The road effectively cuts the unit in half and brings the likelihood of periodic vehicle traffic into the unit's core. Although this road is fairly well screened from view, its presence is a visual impact. Vehicles traversing this road would be a major disruption of solitude values.

The farming and ranching operation on the southeast side of the unit presents an ongoing source of offsite disruption from portions of the WSA. Activities on this ranch are outside the jurisdiction of the BLM and could be a long-term management problem.

Cow Creek

The Preferred Alternative for the Cow Creek Wilderness Study Area is Partial Wilderness Alternative 1 (see Figure 2.5).

The size of this unit, the opportunities for solitude and primitive recreation and the attractiveness of its setting provide better wilderness quality than most in this study. Rugged, moderately timbered and expansive, this WSA has excellent recreational opportunities and contains a number of areas with outstanding solitude. This alternative excludes several developed areas and augments these opportunities by reducing the effect of offsite influences. It excludes four of the five cherry-stemmed roads included in the All Wilderness Alternative. Although the remaining cherry-stemmed road presents a management problem, its adverse effects are modified by the large size and rugged character of this WSA. Supplemental features include cultural and scenic values. Designation of this WSA would supplement the quality and diversity of the NWPS. The outstanding wilderness values outweigh the potential resource conflicts associated with designation.

This WSA has a high potential for deposits of natural gas and contains possible diamond-bearing formations on which nine mining claims have been filed. Much of the area recommended suitable for wilderness presently contains pre-FLPMA oil and gas leases. Development of these leases, with their inherent valid existing rights to explore and develop, could impair wilderness values. Exploration work could occur whether or not the WSA was designated. Because of the large size and abundant topographic and vegetative screening, this WSA could withstand more development than the smaller less screened WSAs. The Preferred Alternative would exclude areas containing approximately 75% of the post-FLPMA leases, reducing the potential conflicts with the minerals industry. Approximately 11% of the remaining acreage, recommended as suitable, contains post-FLPMA leases. In the short term (the life of the lease) no exploration or development work that would damage wilderness values would be allowed. Long-term conflicts with the minerals industry could occur when leases expire after December 31, 1983. Under present laws these leases would not be re-issued, causing the loss of opportunity to explore. The Preferred Alternative excludes areas containing three of nine mining claims. Conflicts would be possible on the remaining claims, but it is uncertain whether any of the claims would be mined because of the high costs of exploration and low probability for a discovery. If they were mined, BLM would have the right to condition access and mining operations so as to be least impairing to wilderness values.

Range developments are scattered throughout the area and a number of new projects are proposed. The long-term protection of wilderness values could limit new access and other surface disturbances associated with project construction. This alternative, however, significantly reduces the impact to grazing permittees by eliminating areas where grazing facilities are concentrated.

The local public is strongly against wilderness designation. The perception of economic impact from wilderness designation in this unit is a consideration. Actual additional out-of-pocket costs to the ranchers because of wilderness, however, are estimated to be low. There has been support, primarily from outside the local area, for wilderness designation.

The overall land patterns of the area are favorable to wilderness designation. Much of the surrounding land is publicly-owned. Private lands outside Federal jurisdiction whose activities may detract from wilderness values have mostly been eliminated from view by the Partial Alternative. The major exception is the single state section still remaining in this alternative. If development were to occur in this section, major disruption of wilderness values in the immediate area would be the probable result. Attempts should be made to acquire this state section and include it within the wilderness area.

The Missouri River is a supplemental value to wilderness. It affords both access and wilderness recreation. The fact that the river has legislative protection shows national interest in the area and provides for long-term management of its natural features.

Antelope Creek

The Preferred Alternative for the Antelope Creek Wilderness Study Area is Partial Wilderness Alternative 1 (see Figure 2.6).

The steep, dissected terrain and scattered timber, especially near the Missouri River, support excellent opportunities for solitude in the 9,600-acre western subsection. Conversely, solitude in the subunit to the east is seriously limited by periodic disruptions caused by vehicles passing on adjacent U.S. Highway 191. This parcel does not have the size or screening to withstand such impacts and is excluded in this alternative.

While no singularly outstanding recreational opportunity exists in Antelope Creek, there are a number of good primitive recreational opportunities. Quality scenery is the major supplemental value. The area recommended as suitable is a physiographic continuation of the CMR's Antelope Creek study unit. The two areas supplement each other with the additional size, augmenting opportunities for solitude and increasing opportunities for non-motorized recreation. Designation of the WSA would be advantageous to the quality and diversity of the NWPS. Overall, wilderness quality is such that it outweighs the potential resource conflicts associated with wilderness designation.

Due to geologic structure, this unit is judged to have a high potential to contain recoverable quantities of natural gas. The area recommended contains both pre- and post-FLPMA oil and gas leases. Development of pre-FLPMA leases, with their inherent valid existing rights to explore and produce, could cause some loss of wilderness values. During the life of these leases, this work could occur whether or not the WSA was designated. This WSA, however, is removed from the known producing areas and has seen only limited exploration to date. Pre-FLPMA leases have been expiring without exploration. The Preferred Alternative would reduce potential conflicts with post-FLPMA leaseholders, but would not eliminate them. The 2,750-acre parcel not recommended as suitable for designation contains only post-FLPMA leases. The post-FLPMA leaseholders in the area proposed for designation could be impacted in the short term (the life of their lease) as any exploration or development work that would damage wilderness values would not be allowed. Long-term conflicts with the minerals industry could occur if the Preferred Alternative were designated as leases that expire after December 31, 1983, would not be re-issued under present laws. The industry would lose future opportunity to explore for natural gas reserves.

The unit is primarily surrounded by undeveloped public land which is primitive in appearance and is used for livestock grazing. This WSA has public access from nearby county roads, the Missouri River and the CMR to the south.

The impact of wilderness on livestock grazing is expected to be quite minor. Only a few grazing facilities are in the area and limited new developments are proposed.

Local opinion is strongly against wilderness designation for any of the Antelope Creek WSA and the perception of economic impact from wilderness designation is a consideration. Actual additional out-of-pocket costs to the ranchers because of wilderness are estimated to be low. The CMR strongly supports the inclusion of Antelope Creek WSA for the enhanced wilderness value and increased wildlife protection which the BLM WSA would provide. There has been support, primarily from outside the local area, for wilderness designation.

The Missouri River is a supplemental value to wilderness. It affords both access and wilderness recreation. The fact that the river has legislative protection shows national interest in the area and provides for long-term management of its natural features.

Bridge Coulee

The Preferred Alternative for the Bridge Coulee Wilderness Study Area is the No Wilderness Alternative.

The combination of low wilderness quality, resource conflicts and potential for wilderness management problems govern the non-suitable recommendation for this area.

The minimal size of this unit, coupled with drainage patterns that open toward farming activities, several homesites and traffic on surrounding roads diminish solitude opportunities. Primitive recreation values and supplemental values are not outstanding. This WSA would not add outstanding quality or diversity to the NWPS.

Conflicts with other resources could occur if this unit were designated as wilderness. Possible restrictions on placement of water developments in this WSA could limit livestock management options. The Preferred Alternative would remove any wilderness constraints on the placement or construction of range projects. The addition of several proposed projects would slightly reduce the naturalness of the area, but the impacts would be site specific because of the broken topography and screening vegetation.

BLM geologists have rated this WSA as having only low to moderate potential for oil or natural gas. There are no pre-FLPMA leases. Post-FLPMA leaseholders could be impacted in the short term (the life of the lease) as any exploration or development work that would damage wilderness values would not be allowed. If this WSA were designated, unexplored or non-producing leases that expired after December 31, 1983, would not be re-issued under present laws. The industry would then lose future opportunity to explore for oil or gas reserves. The Preferred Alternative would eliminate the potential for any short- or long-term conflicts with the minerals industry. Because of the low probability for drilling success, long-term impacts on wilderness values should be minimal with the preferred alternative.

Local opinion is strongly against wilderness designation and the perception of extensive economic impact from wilderness designation is a consideration. Actual additional out-of-pocket costs to the ranchers because of wilderness are estimated to be low.

The overall pattern of landownership in the WSA detracts from long-term manageability of the area as wilderness. Immediately adjacent privately-owned lands are developed as homesites and farmland. Activities on these adjacent areas provide a source of major disruption. Any future development would be outside the jurisdiction of the BLM.

Musselshell Breaks

The Preferred Alternative for the Musselshell Breaks Wilderness Study Area is the No Wilderness Alternative.

The combination of low wilderness quality, resource conflicts and potential for wilderness management problems govern the non-suitable recommendation for this area.

An upgraded vehicle way, which divides this small WSA, detracts from the naturalness of the area. Drainage patterns that open to offsite influences, including farming activities on the west side and vehicle traffic on county roads on both the east and west sides, limit areas where outstanding solitude is available. No outstanding primitive recreational opportunities exist in this WSA. Scenery is a minor supplemental value but is not outstanding. This WSA would not add outstanding quality or diversity to the NWPS.

The Preferred Alternative would eliminate possible conflicts with placement or construction of water developments which could occur with wilderness designation. The addition of several proposed projects would slightly reduce the naturalness of the area, but the impacts would be site specific because of the broken topography and screening vegetation.

BLM geologists have rated this WSA as having only low to moderate potential for oil and natural gas. Only a small percentage of this WSA contains pre-FLPMA oil and gas leases. Inherent in these leases is the right to explore and develop lands whether or not they are designated as wilderness. Some damage to wilderness values would be possible in either case. Post-FLPMA leaseholders could be impacted in the short term (the life of the lease) as any exploration or development work that would damage wilderness values would not be allowed. If this WSA were designated, unexplored or non-producing leases that expired after December 31, 1983, would not be re-issued under present laws. The industry would then lose future opportunity to explore for oil and gas reserves. The Preferred Alternative would eliminate the potential for any short- or long-term conflicts with the minerals industry. Because of the low probability for drilling success, long-term impacts on wilderness values would be minimal with the preferred alternative.

Local opinion is strongly against wilderness designation and the perception of extensive economic impact from wilderness designation is a consideration. Actual additional out-of-pocket costs to the ranchers because of wilderness are estimated to be low.

The overall pattern of landownership in this unit would conflict with the long-term manageability of the area as wilderness. Adjacent privately-owned lands are farmed and provide a source of disruption to solitude values. Future developments would be outside the jurisdiction of the BLM.

Billy Creek

The Preferred Alternative for the Billy Creek WSA is the No Wilderness Alternative.

This unit consists of four parcels separated by roads. It is adjacent to the CMR's Billy Creek and East Seven Blackfoot study areas. The four parcels that make up this WSA do not have the size, outstanding wilderness characteristics or ease of management to augment the contiguous CMR study areas.

BLM geologists have rated the potential for oil and natural gas as low to moderate. Development of pre-FLPMA leases, with their inherent existing rights to explore and produce, could damage wilderness values whether or not the WSA was designated. Post-FLPMA leaseholders could be impacted in the short term (the life of the lease) as any work that would damage wilderness values would not be allowed. Long-term conflicts with the minerals industry would be possible, but not highly probable if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued under present laws. The Preferred Alternative would eliminate conflicts with the minerals industry.

The local ranchers have expressed strong negative sentiment for designation of this WSA. On the other hand, the CMR has expressed interest in these parcels as a logical extension of their Billy Creek and East Seven Blackfoot study areas. The analysis therefore considered in depth, whether these parcels would benefit the CMR wilderness study units.

The key conflict hinges on the fact that the WSA has three roads through Billy Creek, two of which terminate at the CMR boundary. These roads would remain open if the area was designated and could create a manageability problem.

The topography of the eastern two parcels of Billy Creek does not lend itself as a logical extension of the CMR WSA. This part of the BLM area is a narrow ridge forming a transition area between rugged breaks and flat open farmlands. The outstanding opportunities for solitude available in the CMR would not be enhanced by the addition of this eastern portion of the tack-on which would be in clear view of traffic on the county road, farm buildings and wheat farming operations.

The two western parcels are much more rugged with abundant side drainage flowing into Billy Creek. These parcels have excellent screening topography but again a major conflict exists from a road location. The Billy Creek drainage is the common topographic connection between the CMR and BLM study areas. The problem arises from the road which follows the drainage to the CMR boundary. It compromises the wilderness quality of the BLM parcel, creates a manageability problem with vehicular use of the area and reduces the value of these parcels as tack-ons to the point that they are not recommended for designation as wilderness.

Any long-term loss of wilderness values with the No Wilderness Alternative is not expected.

Seven Blackfoot

The Preferred Alternatives for the Seven Blackfoot Wilderness Study Area are Partial Wilderness Alternative 1 (Segment A on Figure 2.10) and Partial Wilderness Alternative 2 (Segment B on Figure 2.10).

These two alternatives are recommended based on their high wilderness quality, limited actual and potential conflicts with other resources and the potential long-term manageability of the area as additions to the CMR East Seven Blackfoot study area.

Although neither unit contains the acreage nor the wilderness characteristics to stand on their own, both are contiguous to the CMR wilderness study area. Both contain the heads of drainages which flow into the CMR, both are logical extensions of ecological units included in the CMR units. Both enhance the wilderness characteristics contained in the CMR units.

Partial Wilderness Alternative 3 (Segment C on Figure 2.10) is separated from the two areas recommended as suitable by roads. Naturalness and solitude opportunities in this segment are flawed by a number of intrusions within the area and from activities on surrounding privately-owned lands. The wilderness quality of this segment is not so outstanding as to substantially benefit the quality or diversity of the NWPS. The existence of the state section in the center of Segment C and the lack of Federal jurisdiction over both it and the surrounding private lands creates management disadvantages which are eliminated through exclusion of this segment.

Almost all existing range developments are located in areas not recommended as suitable. Any restrictions on a grazing permittee's operations would be within the excluded areas.

The discovery and development of oil or gas reserves in any of the subunits would seriously degrade wilderness characteristics. The extremely rugged terrain which would limit exploration activities in the preferred areas and only a low to moderate probability for finding economic quantities of oil and gas further reduce the potential for conflicts.

Local opinion is strongly against wilderness designation for any of the Seven Blackfoot WSA. The perception of a negative economic impact from wilderness designation is a consideration. However, actual additional out-of-pocket expenses to the ranchers because of wilderness designation are estimated to be very low.

The CMR strongly supports the inclusion of BLM WSAs which are contiguous to their study units. However, if the CMR units are not designated wilderness by Congress, it is recommended that the BLM tack-ons not be designated as their key wilderness value is as a physiographic extension of the CMR areas.

Burnt Lodge

The Preferred Alternative for the Burnt Lodge Wilderness Study Area is the All Wilderness Alternative.

Burnt Lodge possesses probably the best wilderness characteristics of any unit in the study. Dense stands of timber interspaced with open meadows, dissected terrain and the area's size contribute to outstanding opportunities for solitude. The unit's proximity to Fort Peck Reservoir, excellent hunting opportunities for deer and elk, good cover for camping and challenging areas for hiking or horseback riding all add to the quality of primitive non-motorized recreation. Excellent scenery enhances the wilderness values of the area. Designation of this unit would be advantageous to the quality and diversity of the NWPS.

Although the discovery of economically recoverable gas or oil in the unit could result in damage to the wilderness resource, geologic structure suggests only a moderate probability for finding marketable quantities of natural gas and a low potential for discovering oil.

Post-FLPMA leaseholders would be impacted in the short term (the life of the lease) as no exploration or development work would be allowed if it would impair wilderness values.

A long-term conflict with the minerals industry is possible, as unexplored leases that expire after December 31, 1983, in designated wilderness areas would not be re-issued under present laws. Industry would lose the future opportunity to explore for reserves with the Preferred Alternative.

The impact of wilderness on grazing permittee operations would be quite low. Few projects exist in the unit and only a .75 mile fence and four reservoirs are proposed.

Local opinion is mixed concerning wilderness designation. One adjacent landowner had no major objection to wilderness designation. The CMR strongly recommends the inclusion of BLM WSAs which are contiguous to their study units.

The unit is adjacent to the Burnt Lodge WSA in the CMR which will be managed as wilderness, at least until Congressional decision. On the north and east sides, however, activities on private lands outside Federal jurisdiction may periodically disrupt wilderness characteristics.

The existence of the state section and a 640-acre private tract located between CMR and BLM study areas present a potential management problem. These holdings are presently undeveloped and would supplement wilderness and remove any landowner conflicts. These parcels should have a high priority for acquisition and inclusion as wilderness if a willing seller relationship can be established. In addition, the section of public land between the CMR unit and the state and private lands should also be wilderness if these non-public inholdings are acquired and if the WSA itself is designated wilderness.

Although some potential management concerns exist with this WSA, probably no other unit in this study has such excellent wilderness quality combined with so few resource conflicts.

Terry Badlands

The Preferred Alternative for Terry Badlands WSA is Partial Wilderness Alternative 2 (see Segments A and B on Figure 2.12).

The area recommended contains nearly all the spectacular badlands, rare limber pine stands, outstanding solitude, and opportunities for primitive and unconfined types of recreation. Much of Segment A is not leased for grazing, eliminating the potential for conflicts with that resource. Public access is good from bordering county roads and the Calypso Trail. By cherry-stemming the road to the Terry Scenic Overlook, the conflict with closing access to the handicapped or elderly to view the spectacular scenery is eliminated. Designation of this WSA would supplement the diversity of the NWPS as this area has excellent wilderness quality.

The area not recommended in this alternative, the southwest parcel (Segment C), while containing substantially fewer wilderness qualities, also has major conflicts. These include potentially economically recoverable coal resources on which there are lease applications, numerous and scattered tracts of private inholdings, a network of vehicle ways and a number of range developments. There is some potential for loss of wilderness value through future development. However, this area does not contain outstanding values and its best use is not for wilderness.

There are still some conflicts with other resources in the recommended area. In Segment B, ranchers will be inconvenienced to some extent where vehicle use is restricted. This is most serious on the vehicle way leading down Crooked Creek in Sections 5, 8 and 17 of T. 12 N., R. 49 E. This way leads to a state section inholding. An attempt should be made to acquire this state section and include it within the wilderness area.

Companies holding post-FLPMA oil and gas leases will also be subject to some inconvenience with more strict regulation on exploration and development. If this WSA is designated, expired leases would not be re-issued under present laws. In this case, the minerals industry would lose the opportunity to explore for and develop natural gas. Oil and gas potential is rated low to moderate in this WSA and losses of valuable reserves are not expected.

Local area sentiment on wilderness designation is divided. Generally the ranching community is moderately opposed, while some persons in the general area support designation of a portion of the unit.

CUMULATIVE IMPACTS OF THE PREFERRED ALTERNATIVES

Areas Recommended as Suitable for Wilderness

Wilderness designation for all or part of 5 WSAs containing 79,770 acres is recommended (see Table 2.1). The five areas are dispersed over a wide geographic, political and economic area and as such, the cumulative impacts on most resources would not be much greater than the individual impacts described in Chapter 4. The potential loss of natural gas production, increases in operating costs to grazing permittees and strong local opposition are the major conflicts. These conflicts would be outweighed by the naturalness, outstanding opportunities for solitude, excellent primitive recreation values and spectacular scenery.

Areas Not Recommended as Suitable for Wilderness

Seven WSAs and parts of four others containing 90,430 acres are not recommended as suitable for wilderness. Resource conflicts identified in Chapter 4 outweigh the benefits gained from wilderness designation. The following summary by resource evaluates the cumulative impacts of all the preferred alternatives.

Air Quality/Climate/Topography/Geology/Soils and Watershed/Vegetation/Cultural Resources

There would be no significant cumulative impacts.

Recreation

Primitive non-motorized recreational opportunities would be enhanced on 79,770 acres. This acreage would be closed to all off-road vehicles (ORV). Forty-eight miles of vehicle ways would be closed for hunting by vehicle and other motorized recreational uses. Handicapped and older persons would be restricted to cherry-stemmed or boundary roads in the five areas. Present use of the rugged backcountry by these persons is estimated as very low. The motorcycle trail in Terry Badlands is recommended for closure in the MFP with or without wilderness designation. The areas not recommended as suitable containing 90,430 acres and 62 miles of vehicle ways would remain open to vehicle use. The present low levels of ORV use are not expected to change, if and when Congress returns the areas to multiple use.

Wildlife

Security areas will be created in the 79,770 acres designated. Because the five areas are widely dispersed, no cumulative impact on density or composition of wildlife is expected. As no wildlife habitat improvement projects are planned in either the suitable or non-suitable areas, no impact is expected. Mineral development in non-suitable areas has a slight potential to limit wildlife habitat.

Livestock Grazing

Of the 79,770 acres recommended as suitable for wilderness designation, all but 3,840 acres in Terry Badlands are permitted for livestock grazing. There will be no cumulative effect on stocking levels or seasons-of-use because of designation. The total additional cost to operators in areas recommended as suitable due to restrictions on use of motor vehicles is estimated to be $2,290 per year. In areas not recommended as suitable, no intensive surface disturbing activities are proposed or anticipated. Slight reductions in natural values are possible in the WSAs from grazing facilities such as reservoirs, fences and associated vehicle ways or roads.

Minerals

Natural gas and possibly coal and oil are the only known energy resources located within the areas recommended as suitable. There are no known deposits of strategic and critical minerals as listed in the *National Defense Stockpile of Strategic and Critical Minerals*.

Of the 79,770 acres recommended as suitable, 31,190 are in areas rated as having high potential for pockets of trapped natural gas. Much of this acreage, however, is extremely rugged and isolated and would be difficult to explore. There is however, an undetermined volume of gas that would not be discovered in designated wilderness under Section 4D(3) of the Wilderness Act which will call for suspension of leasing after December 31, 1983. Approximately 43,500 acres with high potential natural gas deposits would be available for exploration and development in areas not recommended suitable. All other suitable acreage contains low to moderate potential for natural gas and oil and does not create a significant impact to the minerals industry. Seven thousand three hundred and ninety acres in Terry Badlands containing a coal deposit would be available for mining if found to be economically feasible to do so. Although coal occurs in the preferred areas, studies indicate it is not economically feasible to mine.

Local and Regional Socio/Economic Impacts

The potential economic impact on the four-state region is negligible.

The five areas recommended as suitable are widely dispersed over several distinct market areas. Local economic effects of the preferred alternatives would not be cumulative.

The potential loss of revenue from minerals foregone cannot be calculated, but on a worst case basis in Blaine County where the major gas development has occurred, a potential loss of only .15% of present tax revenues to the county would be lost. There would be no loss of long-term employment to any of the counties based solely on wilderness designation of the preferred alternatives.

According to some lenders in the affected area the value of ranches containing BLM grazing permits in wilderness areas would be reduced for long-term loan purposes. Total potential loan value lost by all the affected operators in the five WSAs would be approximately $933,000. This large figure would not represent any loss to an operator unless he needed a substantial loan. Other factors such as real assets and loan history, which indicates an operator's ability to repay his loan, would be considered by lenders in determining the size of loans made.

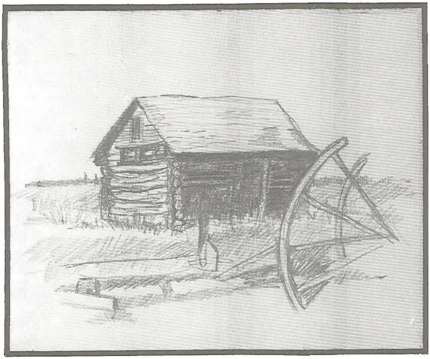
Any loss of loan value should be short term. After several years without a change in livestock use levels, lenders would probably be more willing to value BLM grazing permits in wilderness areas for lending purposes.

Wilderness

A total of five areas containing 79,770 acres would become part of the National Wilderness Preservation System. All of this acreage is in the grama/needlegrass/wheatgrass ecotype. The addition of these prairie and river breaks areas would add to the diversity of wilderness now available in the four-state region. There are presently only 32,647 acres of wilderness available in central and eastern Montana. Demand for additional wilderness in this area has been relatively low, given the existence of unusually extensive wilderness preserves within easy driving distance of major population centers. Recreational use of any areas designated should not substantially increase over the present low levels.

The addition of portions of the Antelope Creek and Seven Blackfoot WSAs would add to the physiographic continuity of study areas in the CMR Wildlife Refuge. Both of these additions are logical continuations of similar terrain that had arbitrarily been restricted by management boundaries.

In the areas not recommended as suitable, there is a potential for some activities that will reduce natural values over the long term, but most areas will retain substantial wilderness values. Off-road travel is not expected to increase in the Breaks. Intensive surface disturbance from grazing management or wildlife management projects is not expected. A number of minor range facilities such as reservoirs, fences, water pipelines and stock tanks, and associated roads or vehicle ways are proposed and expected, but would not significantly detract from wilderness values. In areas with high potential for natural gas development, there would be new roads, pipelines and periodic disturbances from exploration. These activities would reduce natural values, but the extent depends on demand and price of gas and undetermined success in discovering gas reserves.



THREE

AFFECTED ENVIRONMENT

CLIMATE AND AIR QUALITY

This Suitability Study/EIS deals with two, more-or-less distinct geographical locales in central and eastern Montana. Eleven of the twelve Wilderness Study Areas (WSAs) lie along the Missouri and Musselshell Rivers in the center of the state, in an area called the Missouri Breaks. Terry Badlands, the 12th WSA, is about 150 miles south and east of the Missouri, near Terry, Montana.

Both locales experience the short, warm summers and long, cold winters of the continental type climate. Average precipitation ranges from 10-14 inches annually in both areas, which is in the semi-arid range.

Air quality is excellent in both the Missouri Breaks and the Terry Badlands because of the lack of people and industry. All public lands have Class II air quality (good) set by the State of Montana. Particulate concentrations are highest during spring and summer due to farm operations (such as plowing) and lowest in the winter.

TOPOGRAPHY AND GEOLOGY

The Missouri Breaks is part of the Missouri Plateau in the Northern Great Plains, where the Missouri River has cut a canyon 600-800 feet deep. Exposed rock in the Breaks is largely sedimentary shales and sandstone of the Tertiary or Upper Cretaceous periods, lying over even older sedimentary formations like layers in a cake (Figure 3.1).

The present topography of the Missouri Breaks was formed during the Pleistocene epoch when the ice sheet that covered the region melted. The Missouri River established a course south of the Bears Paw and Little Rocky Mountains, cutting deeply into the soft shales and sandstone of the area. This formed the numerous, steep hills and deep coulees typical of the Missouri Breaks. Formations in the Missouri Breaks are rich in vertebrate and invertebrate fossils.

The Terry Badlands were formed when the Yellowstone River and its tributaries eroded through parts of the Fort Union Formation of Tertiary Age (Figure 3.1). This WSA has similar characteristics in its river breaks landform to the Missouri Breaks. The bottom lands on the north bank of the Yellowstone River are surrounded by steep, eroded slopes, divided by many deep gullies. The rough hillsides, studded with sandstone bridges, buttes, tabletops, spires and small scoria escarpments, rise to meet rolling benches north of the river.

RECREATION

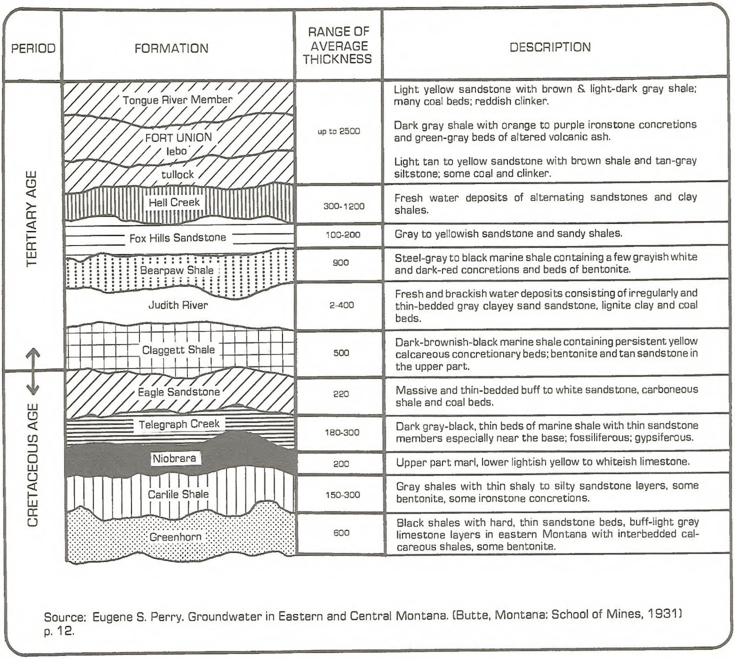
Recreational Uses and Opportunities

Hunting is by far the most popular recreational use in the WSAs, accounting for most visitor days. The number of hunter days spent in the study areas is unavailable but the *State Comprehensive Outdoor Recreation Plan* (Montana Department of Fish, Wildlife and Parks, 1978) indicates the significance of the general area for hunting mule and white-tailed deer. The Missouri Breaks are nationally known for the numerous trophy buck deer and for the abundance of other wildlife. Particularly attractive to hunters is the elk herd in the Burnt Lodge WSA, Merriam's turkeys found in Seven Blackfoot and the pronghorn antelope in the Billy Creek WSA. Varmint hunting—mainly for coyotes and prairie dogs—occurs wherever populations permit.

Off-road vehicle (ORV) use is also common in the WSAs. Visitors generally come by 4-wheel drive vehicle to hunt, to collect rocks and fossils and to view the scenery. A number of 2-wheel tracks along major ridgetops attest to ORV travel. Vehicle use increases substantially during hunting season. Because of its proximity to Terry, Montana and to Interstate 94, the Terry Badlands WSA contains nearly 3,000 acres that receives various degrees of off-road motorcycle use.

Six of the twelve WSAs lie along the Upper Missouri Wild and Scenic River. The portion of the river flowing past these WSAs (from the PN Ferry to the Fred Robinson Bridge) received 651 recorded floaters in 1979, 610 in 1980. Recreational use of the study areas by floaters is centered in the bottom lands along the river where cottonwood groves provide the best campsites. Visitors occasionally hike into the WSAs but are often discouraged by the steep terrain. The Missouri provides warm water fishing from the shorelines in several WSAs.

FIGURE 3.1: GEOLOGIC FORMATIONS IN THE WSAs.



PERIOD	FORMATION	RANGE OF AVERAGE THICKNESS	DESCRIPTION
TERTIARY AGE	FORT UNION Tongue River Member lebo tullock	up to 2500	Light yellow sandstone with brown & light-dark gray shale; many coal beds; reddish clinker. Dark gray shale with orange to purple ironstone concretions and green-gray beds of altered volcanic ash. Light tan to yellow sandstone with brown shale and tan-gray siltstone; some coal and clinker.
	Hell Creek	300-1200	Fresh water deposits of alternating sandstones and clay shales.
	Fox Hills Sandstone	100-200	Gray to yellowish sandstone and sandy shales.
	Bearpaw Shale	900	Steel-gray to black marine shale containing a few grayish white and dark-red concretions and beds of bentonite.
	Judith River	2-400	Fresh and brackish water deposits consisting of irregularly and thin-bedded gray clayey sand sandstone, lignite clay and coal beds.
	Claggett Shale	500	Dark-brownish-black marine shale containing persistent yellow calcareous concretionary beds; bentonite and tan sandstone in the upper part.
CRETACEOUS AGE	Eagle Sandstone	220	Massive and thin-bedded buff to white sandstone, carboneous shale and coal beds.
	Telegraph Creek	180-300	Dark gray-black, thin beds of marine shale with thin sandstone members especially near the base; fossiliferous; gypsiferous.
	Niobrara	200	Upper part marl, lower lightish yellow to whiteish limestone.
	Carlile Shale	150-300	Gray shales with thin shaly to silty sandstone layers, some bentonite, some ironstone concretions.
	Greenhorn	600	Black shales with hard, thin sandstone beds, buff-light gray limestone layers in eastern Montana with interbedded calcareous shales, some bentonite.

Source: Eugene S. Perry. Groundwater in Eastern and Central Montana. (Butte, Montana: School of Mines, 1931) p. 12.

Another recreational use in the WSAs is camping, with users entering the WSAs by vehicle, foot or pack horse. Most camping is associated with other uses such as hunting or river floating and is limited by the lack of potable water in the unit.

Other possible recreational uses include cross-country skiing and snowmobiling. Participation in these sports is limited by the difficulty of getting into the WSAs in inclement weather and the fact that comparable locations can be found much closer to population centers.

Visual Resources

Visual qualities are high in all units. From the sheer, bare cliffs of Dog Creek South, to the open central valleys of Cow Creek, to the deeply dissected, tree-fringed topography of Seven Blackfoot, these WSAs contain some of the best scenery in the region. Except for Bridge Coulee, Musselshell Breaks and the northern half of the Cow Creek WSA, all study areas were judged during BLM's planning process to contain excellent scenery. Most of these WSAs contain badlands-type topography, with banded, vari-colored exposed cliff faces and rock outcroppings.

Projected Visitation Trends in the WSAs

The UL Bend Wilderness Area in the National Wilderness Preservation System is the one most like the study areas in this Suitability Study/EIS . Administered by the U.S. Fish and Wildlife Service, this wilderness area approximates BLM's units in ecotype, regional proximity and probable usage.

Before designation, UL Bend saw some vehicle-based visitation by fishermen traveling to Fort Peck Lake and by hunters during the big game season (October and November). Wilderness designation stopped vehicle use and visitation dropped. USFWS states usage is presently up to pre-designation levels but still very limited. Present users include boaters during the summer months and several hunting parties who pack into the area between September and November.

This visitation pattern could be expected to be repeated in the WSAs in this document, especially in those units next to the Missouri. Vehicle-based hunting would be cut off, to be replaced by floater and non-motorized hunters attracted by wilderness designation. From the experience at UL Bend, recreation would return to essentially the same levels as before designation after a short-term drop. Types of users would change as vehicle-based recreationists were replaced by foot or horseback users. People from outside the state would probably be more likely to visit wilderness areas in the Missouri Breaks than prior to designation.

The area already has received national recognition through the designation of the Upper Missouri as a wild and scenic river. Figures from 1981 on the Missouri River indicate use at 13,270 visitor days (one visitor for 12 hours), covering both river and bankside use. Approximately 75% of this recreational use was from in-state visitors. Some of these visitors take short hikes into the surrounding lands.

Overall, little additional visitation would be anticipated.

CULTURAL RESOURCES

Information about cultural resources in the WSAs has been collected from reviews of literature, field inventories conducted for the *Missouri Breaks Grazing EIS* (1978) and BLM's management framework plans. Clearance for range projects and other archeological fieldwork has also contributed data, providing information about the number, quality and type of prehistoric and historic features present in the study areas.

In the WSAs and the surrounding region are the remnants of human occupation dating back 12,000 years. Prehistoric people who frequented the area were hunters and gatherers. They shifted residences in response to seasonal changes in food resource opportunities and the never-ending needs of defense, shelter, water, fuel and raw materials for tool production. These groups were usually small, possessing only what appears to be a limited set of stone, wood and bone tools. Over time bison became a major food source as newer techniques of trapping the animals were developed.

Although only a small percentage of the WSAs has been field inventoried, there are about 35 known prehistoric sites in or around the WSAs, limited to a few site types. Lithic scatters (stone debris from tool making) and tipi rings (stone circles used to anchor skin tents or tipis) make up the most common sites. Less common are the bison (and other animal) kill sites, rock alignments and cairns associated with these sites, rock art and burial sites. In the Cow Creek WSA, the Keaster site is acknowledged as an excellent example of a late middle prehistoric bison kill and processing site. It represents a hunting and gathering culture, dating to about 240 B.C. that specialized in bison.

In 1975 and 1980 a field inventory on 6,720 acres in the Terry Badlands WSA found 15 lithic scatter sites. There were Indian camps dating back 3,000 years. The survey indicated a moderate site density of 1.4 sites/section (640 acres) for the WSA. Prehistoric sites of exceptional quality are expected to be found here because the rapid soil movement tends to create conditions favorable for locating buried, well preserved, cultural resources.

A field inventory (sampling type) in Fergus County and in parts of south Phillips and Blaine counties projected large numbers of sites would be found in the Missouri Breaks area (BLM, *Missouri Breaks Grazing EIS*, 1978). The expected site density would range from 0.35 to 2.30 sites/section, varying because of differing landforms and vegetation communities. As yet only a few of the most common types of sites have been found. It is expected, however, that a small number of each of the rarer site types will probably be discovered in the future.

The area along the Missouri River is also historically significant. Many of the WSAs lie along unimpounded sections of the Missouri River, presenting a relatively unspoiled setting with many historical remnants.

WILDLIFE

The abundance and diversity of wildlife in the Missouri Breaks and the Yellowstone River area have been noted since the days of Lewis and Clark. Presently, 60 species of mammals, 233 species of birds, 20 of reptiles and 49 of fish inhabit these areas. Game animals and fish provide recreational opportunities for people from all over the country.

Below is a general description of species commonly found in the Missouri Breaks and the Yellowstone River areas, subdivided as an aid to the reader. Detailed species lists can be found in the BLM Miles City and Lewistown District Offices. Appendix 3.1 lists the common and scientific names of species mentioned.

Big Game

Mule deer are the most abundant and important big game species in the WSAs. All study areas provide mule deer habitat. The estimated population ranges of mule deer are shown in Table 3.1, which details the distribution of all major wildlife species found in the units.

TABLE 3.1: WILDLIFE OCCURRENCE AND RELATIVE ABUNDANCE

WSA Unit Species (#/mi² WSA)	Dog Creek South	Stafford	Ervin Ridge	Woodhawk	Cow Creek	Antelope Creek	Bridge Coulee	Musselshell Breaks	Billy Creek	Seven Blackfoot	Burnt Lodge	Terry Badlands
BIG GAME												
Mule Deer	2.5-10.0	2.5-12.0	2.5-10.0	2.5-12.0	2.5-10.0	2.5-10.0	4.2-5.5	2.5-5.0	4.2-4.6	4.2-14.5	3.0-5.0	1.5-2.5
White-tailed Deer	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.0-0.2	0.2-0.3	0.0-0.1	0	0.0-0.2	0	0.0-0.1
Elk	0	0	0	0.0-0.2	0.0-0.2	0.7-1.2	0	0	0	0	7.5-9.0	0
Pronghorn Antelope	0	0	0.5-1.0	0	0.0-0.2	0.0-0.2	0	0	1.0-2.5	0.1-0.2	0	0.0-0.2
UPLAND GAME BIRDS												
Sage Grouse	1.0-2.4	0.1-1.0	1.0-2.0	0.1-1.0	1.0-2.4	1.0-2.0	0	0.0-0.1	0	0.0-0.3	0.0-0.1	0.4-1.5
Sharp-tailed Grouse	0.1-0.5	0.1-0.5	0.0-0.3	1.0-2.0	0.1-0.5	0.1-0.5	0.1-0.3	0.2-0.3	0.0-0.1	0.0-0.3	0.0-0.2	0.4-0.9
Ring-necked Pheasant	0	0.0-0.2	0	0	0	0	0	0.0-0.1	0	0.0-0.1	0.0-0.1	0.0-0.1
Hungarian Partridge	0.1-0.3	0.0-0.2	0.1-0.2	0.2-0.3	0.1-0.2	0.1-0.2	0	0.1-0.2	0	0	0	0.4-1.0
Merriem Turkey	0	0	0	0	0	0	0	0	0.0-0.5	1.0-3.0	0	?
WATERFOWL												
Duck	0	0.3-0.7	0.1-0.5	1.6-2.0	0.1-0.5	0.1-0.4	0	0	0	0.1-0.6	0	0.1-1.0
Geese	0	0	0.1-0.4	0.5-1.9	0	0	0	0	0	0	0	0.1-0.7
FURBEARING												
Bobcat	0	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0	0	0	0.0-0.1	0.0-0.1	0.1-0.2
Mountain Lion	0	0	0	0	0.0-0.1	0	0	0	0	0.0-0.1	0	0.0-0.1
Beaver	0.1-0.2	0.0-0.1	0.0-0.1	0.2-0.5	0	0.0-0.1	0	0	0	0	0	0.1-0.2
Fisheries Reservoirs												
Cold Water	0	0	0	0	0	0	0	0	0	0	0	0
Warm Water	0	0	0	0	1	0	0	0	1	1	0	0
PREDATORS												
Coyote	0.1-0.2	0.1-0.2	0.1-0.3	0.1-0.3	0.1-0.3	0.1-0.2	0.1-0.3	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.2	0.1-0.3

Sources:

1. Montana Department of Fish, Wildlife and Parks, Federal Aid Project FW-3-R, Middle Misouri River Wildlife Study, Jobs 1A, 18, & 1C
2. Montana Department of Fish, Wildlife and Parks, Federal Aid Project W-120-R, Montana Deer Studies, Study BG-100, Job 3; Mule deer population study, White-tailed deer population study — Eastern Montana Breaks and River bottom.
3. Montana Department of Fish, Wildlife and Parks, Research Bureau (Sponsored by BLM, Contract #YA-512-CR8-217). Terry Badlands Nongame survey and Inventory, Final Report.
4. Montana Department of Fish, Wildlife and Parks, Rough draft, Missouri River Breaks Elk Management Plan, 1980.
5. C. Robert Watts, Region 4 Fish and Wildlife Biologist, Personal Communication.
6. Kerry T. Constan, Region 4 Fish and Wildlife Biologist, Personal Communication.

White-tailed deer habitat is confined to places where brush is combined with crop and hay lands along streams. Because of this, whitetails are found mainly in the major drainages along the edges of the units. Table 3.1 gives the distribution of whitetails in each study area.

Antelope habitat in the area is mainly the open sagebrush-grassland on the edges of WSAs and around them. Here antelope can use their keen sight and speed to advantage. The table gives the estimated population in each study area.

There have been several transplants of elk in the river breaks habitat since 1951, restoring this animal to an area to which it was once indigenous. The elk population has grown to the point where the herds provide some hunting opportunities (Table 3.1).

Bighorn sheep are native to the Missouri and Yellowstone River drainages. There are recommendations to reintroduce this animal in the Terry Badlands WSA. Twenty-seven bighorn sheep were planted at Chimney Bend on the south side of the Missouri in 1979. This herd has since split, some crossing the river and establishing a new herd on the north side, west of the Ervin Ridge WSA.

Upland Game Birds

Sage grouse are found in the study areas in the same habitat preferred by antelope — the sagebrush-grasslands. Sage grouse usually nest in sagebrush within two miles of their mating grounds. Sharp-tailed grouse are distributed throughout the WSAs where perennial grass and brush coulees join, using the grass for roosting, nesting and feeding.

Pheasants and Hungarian (gray) partridges inhabit areas associated with agricultural lands outside the WSAs. Partridges also are able to make use of the drier sites found on the edges of the units.

Merriam's turkeys were planted in the Missouri Breaks in 1957. The lack of deciduous shrubs for winter habitat and food has limited their range to farms and feedlots outside the units. The Seven Blackfoot WSA currently has a population capable of supporting hunting (Table 3.1).

Waterfowl

Canada geese, shorebirds and a large variety of ducks use the Missouri River (which forms the boundary of six of the WSAs) for nesting and as a migration stopover. They also use reservoirs inside the units. Common shorebirds in the area are the killdeer and avocet, while duck species include the mallard, pintail, gadwall and blue-winged teal.

Fur-bearing Mammals

The following fur-bearers are found in the study areas: muskrats, beaver, badgers, bobcats, racoons and foxes (Table 3.1). Populations and habitat areas have not been determined.

Predators

Coyotes are the most common predator in the study areas. Other predators found in the WSAs are skunks and weasels.

Non-game Species

The available surveys for the WSAs place the number of non-game birds at more than 130 species and show 30 species of mammals and 13 reptile species. Lists of these species are available in the BLM Miles City and Lewistown District Offices.

Fisheries

Several reservoirs in the units provide trout and bass fishing. The Montana Department of Fish, Wildlife and Parks (MDFWP) and the U.S. Fish and Wildlife Service have classified Bullwacker Creek, Cow Creek and Timber Creek as moderate-value fishery resources, while the Missouri and Yellowstone Rivers are rated high-value fishery resources. Game fish species in these rivers are sauger, catfish, paddlefish and walleye. The Musselshell River is a high-priority fishery resource (USFWS 1980).

Threatened or Endangered Species

Wintering bald eagles on the Missouri River are the only threatened or endangered species occurring in the study areas. Potential habitat for the peregrine falcon exists in the study areas in the Missouri and Musselshell Breaks and the Terry Badlands WSA. Terry Badlands has historical peregrine falcon aeries and this species is recommended for reintroduction. "Non-game Species of Special Interest and Concern" (MDFWP) which may occur in the WSAs can be found in *Species of Special Interest and Concern* (Flath 1981).

SOILS AND WATERSHED

The soils of the WSAs are developed mainly from sedimentary bedrock and mixed-rock alluvium on river breaks topography, where valley walls rise abruptly above the narrow floodplains and ridgetops are cut by many drainages. This topography is extremely erodible and surface runoff is very rapid, so large amounts of sediment are being washed away. Parent materials consist of shales, siltstones and sandstones of the Bearpaw, Judith River, Claggett and Eagle Sandstone Formations (see Figure 3.1).

Clayey soils are shallow to moderately deep and generally well drained. Where high sandstone ridges occur, the soils are generally moderately deep with sandy and loamy textures. Deep soils occur as alluvial deposits along drainages.

Soil mapping units can be found in Appendix 3.2 for each WSA. A detailed description of the soil mapping units and soil series descriptions can be obtained from BLM and from U.S. Soil Conservation Service offices in each of the six counties.

With the exception of the Missouri, Musselshell and Yellowstone Rivers (which form the boundaries of some of the WSAs), most of the surface water in the study areas is ephemeral: coulees flowing during spring runoff and for short periods following storms. These high volume, short period flows carry large amounts of sediment from the highly erosive watersheds.

The occurrence of groundwater is discussed in BLM's *Missouri Breaks Grazing EIS*. Groundwater in the form of springs is uncommon in the WSAs.

LIVESTOCK GRAZING

There are presently 45 operators with grazing permits in the 12 study areas. These operators have 17,745 animal unit months (AUMs)—the amount of feed or forage required by one mature 1,000-pound cow or the equivalent for one month—of grazing privileges inside the WSAs. Table 3.2 gives the allotment name and number, seasons-of-use and AUMs in each of the WSAs. Figures 3.1-3.12 show the allotment boundaries in the study areas.

Table 3.3 shows the type and number of proposed range improvements for each allotment in the WSAs. These proposals are preliminary, e.g. reservoir locations have not yet been reviewed by the Lewistown District's Operation Staff, nor have archeological or other clearances been obtained at this time.

TABLE 3.2: GRAZING PRIVILEGES IN THE WILDERNESS STUDY AREAS

Wilderness Study Area	Allotment Name	Mgmt. Stature	Number	Season	Federal AUMs Allotment	WSA
Dog Creek South	P.N.	E	0067	05/20-11/15	1,931	489
	Iron City Island	P	0066	06/16-10/15	92	22
	Stulc	E	0081	05/01-11/30	500	34
Stafford	Gallatin Rapids	P	6222	05/10-10/27	287	167
	Golf Bench	E	6203	04/16-12/13	989	28
Ervin Ridge	Barnard Ridge	P	6209	06/01-10/31	432	137
	Black Butte	P	6211	05/01-10/01	731	145
	Ervin Ridge	P	6212	06/01-10/30	912	352
Woodhawk	Woodhawk	E	0031	05/01-10/31	3,992	753
	Reed Coulee	E*	0071	07/01-10/31	544	87
Cow Creek	Hay Coulee Common	E	6182	05/16-11/15	1,505	116
	Timber Ridge	P	6172	05/16-10/15	1,807	484
	Spencer Ridge	P	6194	12/01-03/31	587	254
	Cabin Creek	E	5609	05/01-10/31	1,156	1,001
	North Cabin Creek	P	5607	05/16-07/01	243	80
	Antelope Creek	P	5610	05/01-12/31	4,594	1,444
	Little Bullwacker	E*	6214	04/01-12/31	1,557	18
Antelope Creek	Antelope Creek	P	5610	05/01-12/31	4,594	1,022
Bridge Coulee	C.K. Cattle	E	2165	04/01-11/30	1,248	585
	Newhouse - Nordahl	Pot.	6372	04/15-11/15	769	83
Musselshell Breaks	Lyle Chamberlin	P	4847	09/01-02/28	1,063	775
	Carl Peterson	P	4849	07/16-01/15	602	282
	Carl & Larry Peterson	C	4848	03/01-02/28	155	34
	Fred Nordahl	C	4836	04/16-12/15	656	159
Billy Creek	F.S. McKeever	Pot.	2215	06/01-10/31	294	69
	Coulter Ranch	Pot.	2060	05/16-10/15	132	88
	McKeever Homestead	Pot.	2214	06/01-11/15	532	214
Seven Blackfoot	Danial & Edgar Loomis	C	2198 & 2199	05/01-10/04	148	91
	Margaret Stafford	C	2319	07/04-11/03 03/01-02/28	46	46
	George T. Wilson	P	2371	04/01-11/30	1,087	940
	Emmett Clark & Son	C	2052	06/01-09/30	102	102
	Seven Blackfoot Common	C	2260 & 2362	05/01-10/11	320	317
	McKeever Homestead	C	2214	06/01-11/15	532	202
	Phipps Ranch Inc.	C	2261 & 2262	06/01-08/31	99	49
	Dan Loomis	C	2198	03/01-02/28	28	28
	Edgar Loomis	C	2199	03/01-02/28	44	44
	Clara Bragg	C	2026	03/01-02/28	142	45
Burnt Lodge	Burnt Lodge	P	5667	05/01-10/31	601	225
	Larb Hills	P	5660	10/16-03/30	903	875
	Carpenter Creek	P	4595	11/01-07/15	5,582	915
Terry Badlands	Haughian Livestock	Pot.	2747	06/01-11/15	6,387	2,687
	Lawrence Keltner	Pot.	2754	01/01-06/30	5,937	99
	Hines Ranch	E	2750	03/01-02/28	3,187	1,833
	Cherry Creek Ranch	Pot.	2780	03/01-02/28	1,777	368
	Coffee - Nefsy Common	E	2797	05/01-11/30	168	66
	William Nefsy	E	2772	05/01-12/15	4,152	214

E — Existing AMP
P — Proposed AMP
Pot. — Potential AMP
C — Custodial

* AMP partially implemented

Source: BLM, 1981

TABLE 3.3: PROPOSED RANGE IMPROVEMENTS

	Fence (Miles)	Cattle Guards (No.)	Reservoirs (No.)	Wells (No.)	Springs (No.)	Pipeline (Feet)	Catchments (No.)
Dog Creek South							
PN Allotment			1				
Stafford							
Gallatin Rapids Allotment	.5						
Ervin Ridge							
Black Butte Allotment		1	2		1		1
Ervin Ridge Allotment	2		2	1		10,560	1
Woodhawk							
No projects proposed							
Cow Creek							
Timber Ridge Allotment			7				
Spencer Ridge Allotment	2		2				2
Antelope Creek Allotment			4				
Antelope Creek							
Antelope Creek Allotment			6				
Bridge Coulee							
Sandage Coulee Allotment				1		13,250	
Musselshell Breaks							
Ox Yoke Allotment				1		10,560	
Haley Coulee Common Allotment			2				
Billy Creek							
No projects proposed							
Seven Blackfoot							
Big Coulee Allotment			1				
7 Blackfoot Allotment	1		3		1		
Burnt Lodge							
Burnt Lodge Allotment	.75		4				
Terry Badlands							
No projects proposed							

Source: BLM, 1981

FIGURE 3.2 DOG CREEK SOUTH (MT-068-244) LAND STATUS/ALLOTMENT BOUNDARY MAP

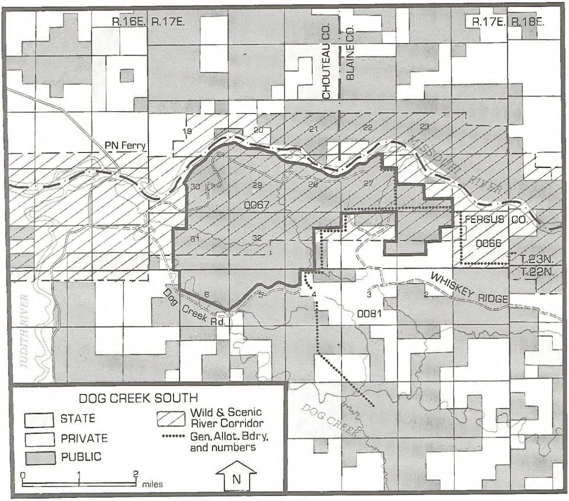

R.16E.
R.17E.
CHOUTEAU CO.
BLAINE CO.
R.17E.
R.18E.
19
20
21
22
23
PN Ferry
MISSOURI RIVER
30
29
28
27
0067
FERGUS CO.
0066
31
32
T.23N.
T.22N.
WHISKEY RIDGE
6
5
4
3
2
Dog Creek Rd.
0081
JUDITH RIVER
DOG CREEK
DOG CREEK SOUTH
STATE
PRIVATE
PUBLIC
Wild & Scenic River Corridor
Gen. Allot. Bdry. and numbers
0
1
2
miles
N

FIGURE 3.3 STAFFORD (MT-066-250) LAND STATUS/ALLOTMENT BOUNDARY MAP

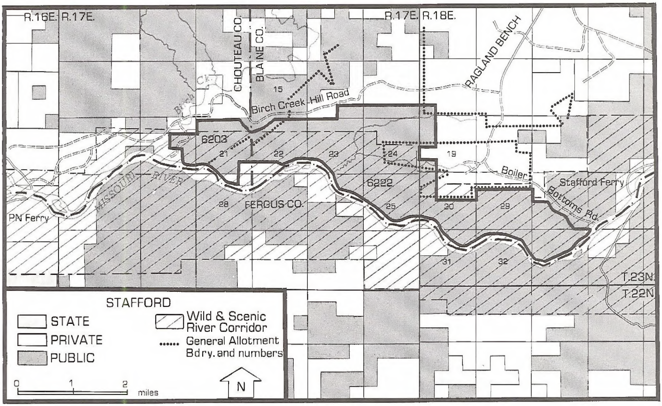

R.16E.
R.17E.
CHOUTEAU CO.
BLAINE CO.
R.17E.
R.18E.
RAGLAND BENCH
Birch Ck.
15
Birch Creek Hill Road
6203
21
22
23
24
19
Boiler
Stafford Ferry
Bottoms Rd.
MISSOURI RIVER
6222
PN Ferry
28
FERGUS CO.
25
30
29
31
32
T.23N.
T.22N.
STAFFORD
STATE
PRIVATE
PUBLIC
Wild & Scenic River Corridor
General Allotment Bdry. and numbers
0
1
2
miles
N

FIGURE 3.4 ERVIN RIDGE (MT-066-253) LAND STATUS/ALLOTMENT BOUNDARY MAP

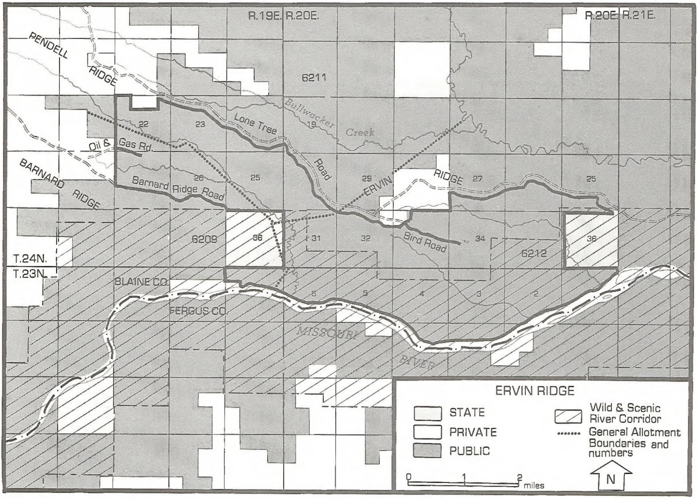
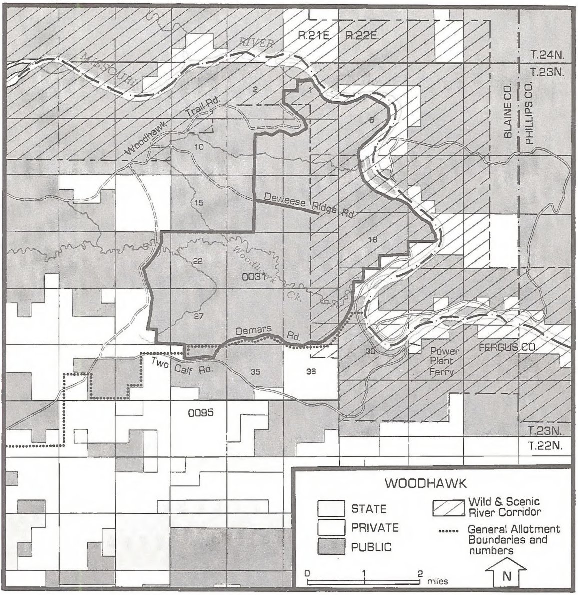

R.19E.
R.20E.
R.20E.
R.21E.
PENDELL RIDGE
6211
Bullwacker Creek
Lone Tree Road
22
23
19
Oil & Gas Rd.
BARNARD RIDGE
Barnard Ridge Road
26
25
29
ERVIN RIDGE
27
25
6209
36
31
32
Bird Road
34
6212
36
T.24N.
T.23N.
BLAINE CO.
FERGUS CO.
6
5
4
3
2
MISSOURI RIVER
ERVIN RIDGE
STATE
PRIVATE
PUBLIC
Wild & Scenic River Corridor
General Allotment Boundaries and numbers
0
1
2
miles
N

FIGURE 3.5 WOODHAWK (MT-068-246) LAND STATUS/ALLOTMENT BOUNDARY MAP



R.21E.
R.22E.
T.24N.
T.23N.
MISSOURI
RIVER
BLAINE CO.
PHILLIPS CO.
2
1
6
10
15
18
22
27
30
35
36
Woodhawk Trail Rd.
Deweese Ridge Rd.
Woodhawk Ck.
0031
Demars Rd.
Two Calf Rd.
Power Plant Ferry
FERGUS CO.
0095
T.23N.
T.22N.
WOODHAWK
STATE
PRIVATE
PUBLIC
Wild & Scenic River Corridor
General Allotment Boundaries and numbers
0
1
2
miles
N

FIGURE 3.6 COW CREEK (MT-066-256) LAND STATUS/ALLOTMENT BOUNDARY MAP

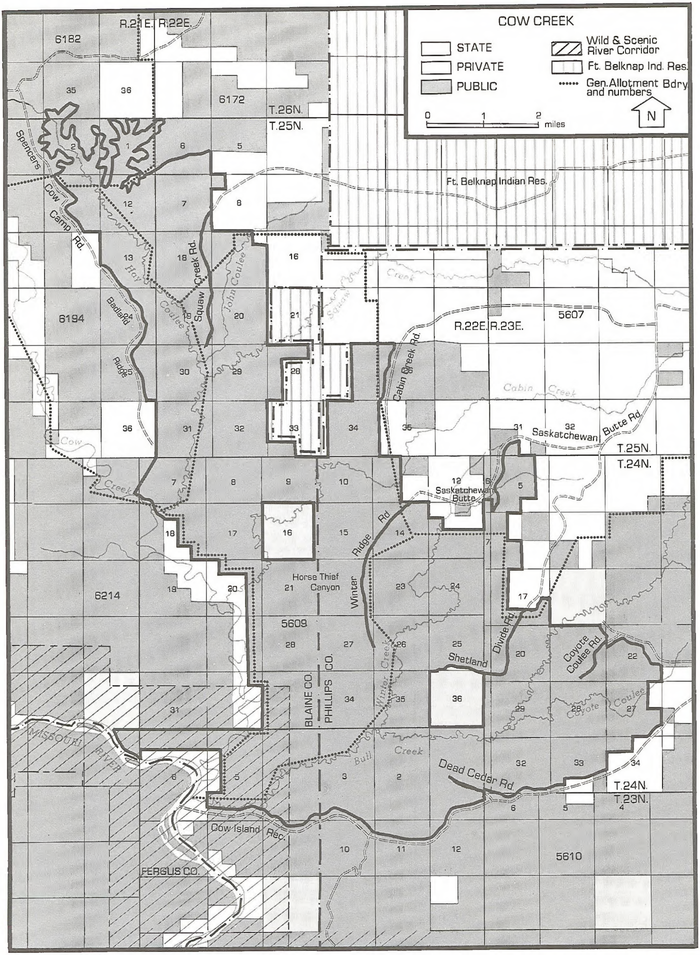

COW CREEK
STATE
PRIVATE
PUBLIC
Wild & Scenic River Corridor
Ft. Belknap Ind. Res.
Gen. Allotment Bdry and numbers
0 1 2 miles
N
R.21E. R.22E.
R.22E. R.23E.
T.26N.
T.25N.
T.24N.
T.23N.
6182
6172
6194
6214
5607
5609
5610
Ft. Belknap Indian Res.
Spencers
Cow Camp Rd.
Badland Ridge
Hay Coulee
Squaw Creek Rd.
John Coulee
Squaw Creek
Cabin Creek Rd.
Cabin Creek
Saskatchewan Butte Rd.
Saskatchewan Butte
Cow Creek
Horse Thief Canyon
Winter Ridge Rd.
Winter Creek
Shetland Divide Rd.
Coyote Coulee Rd.
Coyote Coulee
Bull Creek
Dead Cedar Rd.
Missouri River
Cow Island Rec.
Fergus Co.
Blaine Co.
Phillips Co.

FIGURE 3.7 ANTELOPE CREEK (MT-065-266) LAND STATUS/ALLOTMENT BOUNDARY MAP

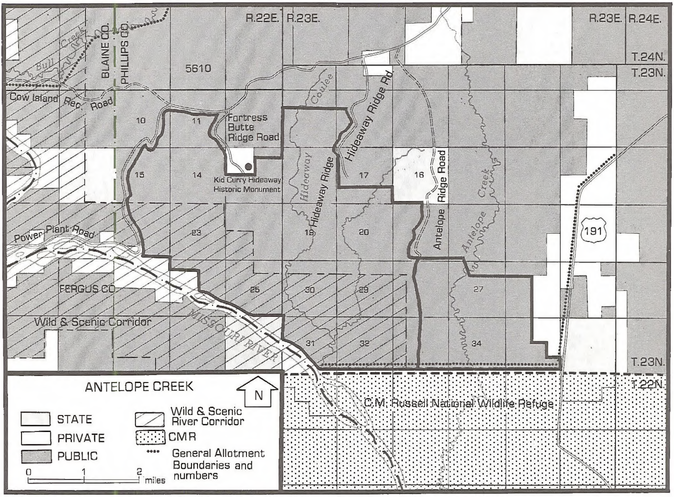

R.22E.
R.23E.
R.23E.
R.24E.
T.24N.
T.23N.
T.23N.
T.22N.
BLAINE CO.
PHILLIPS CO.
Bull Creek
5610
Cow Island Rec. Road
Coulee
Hideaway Ridge Rd
10
11
Fortress Butte Ridge Road
14
15
Kid Curry Hideaway Historic Monument
Hideaway
Hideaway Ridge
17
16
Antelope Ridge Road
Creek
Antelope
Power Plant Road
23
19
20
191
FERGUS CO.
25
30
29
27
Wild & Scenic Corridor
MISSOURI RIVER
31
32
34
C.M. Russell National Wildlife Refuge
ANTELOPE CREEK
N
STATE
PRIVATE
PUBLIC
Wild & Scenic River Corridor
CMR
General Allotment Boundaries and numbers
0
1
2
miles

FIGURE 3.8 BRIDGE COULEE (MT-024-675) LAND STATUS/ALLOTMENT BOUNDARY MAP

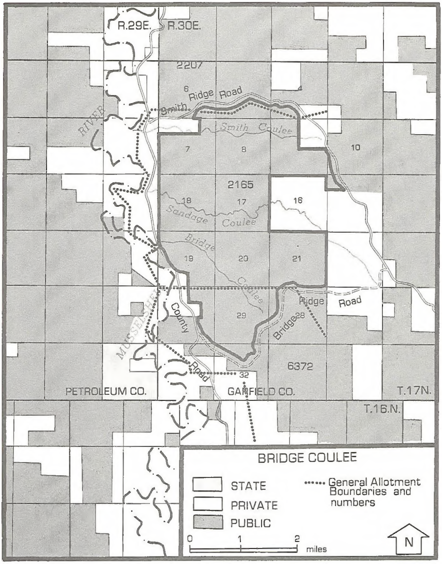

R.29E.
R.30E.
2207
6
4
Smith Ridge Road
RIVER
Smith Coulee
7
8
10
2165
18
17
16
Sandage Coulee
Bridge Coulee
19
20
21
Ridge Road
County Road
29
28
Bridge
MUSSELSHELL
6372
32
PETROLEUM CO.
GARFIELD CO.
T.17N.
T.16.N.
BRIDGE COULEE
STATE
PRIVATE
PUBLIC
General Allotment Boundaries and numbers
0
1
2
miles
N

FIGURE 3.9 MUSSELSHELL BREAKS (MT-024-677) LAND STATUS/ALLOTMENT BOUNDARY MAP

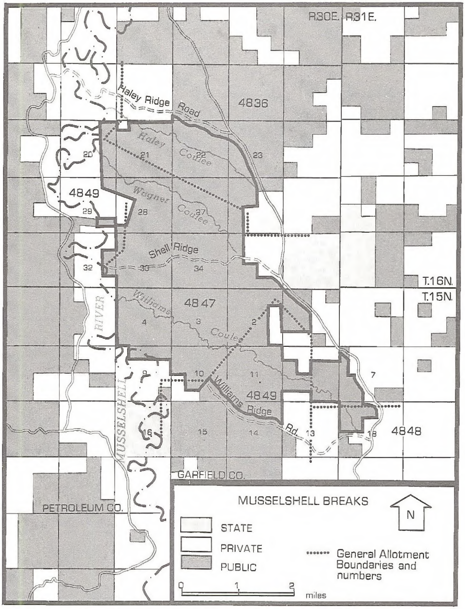

R30E.
R31E.
Haley Ridge Road
4836
Haley Coulee
Wagner Coulee
Shell Ridge
Williams Coulee
Williams Ridge Rd.
4849
4847
4848
T.16N.
T.15N.
MUSSELSHELL RIVER
GARFIELD CO.
PETROLEUM CO.
20
21
22
23
29
28
27
32
33
34
4
3
2
9
10
11
7
16
15
14
13
18
MUSSELSHELL BREAKS
N
STATE
PRIVATE
PUBLIC
General Allotment Boundaries and numbers
0
1
2
miles

FIGURE 3.10 BILLY CREEK (MT-024-633) LAND STATUS/ALLOTMENT BOUNDARY MAP

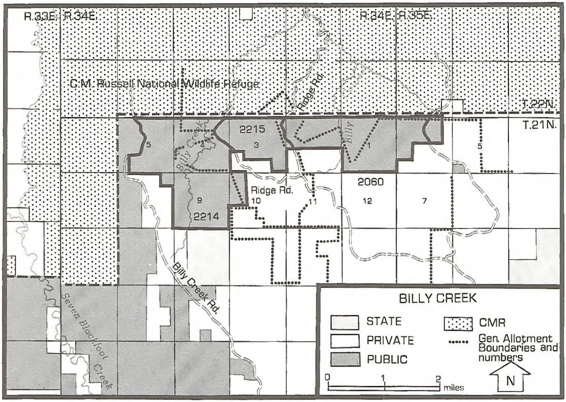

R.33E. R.34E.
R.34E. R.35E.
C.M. Russell National Wildlife Refuge
Ridge Rd.
T.22N.
T.21N.
2215
5
4
3
1
5
Billy Creek
Billy
2060
Ridge Rd.
9
10
11
12
7
2214
Billy Creek Rd.
Seven Blackfoot Creek
BILLY CREEK
STATE
PRIVATE
PUBLIC
CMR
Gen. Allotment Boundaries and numbers
0
1
2
miles
N

FIGURE 3.11 SEVEN BLACKFOOT (MT-024-657) LAND STATUS/ALLOTMENT BOUNDARY MAP

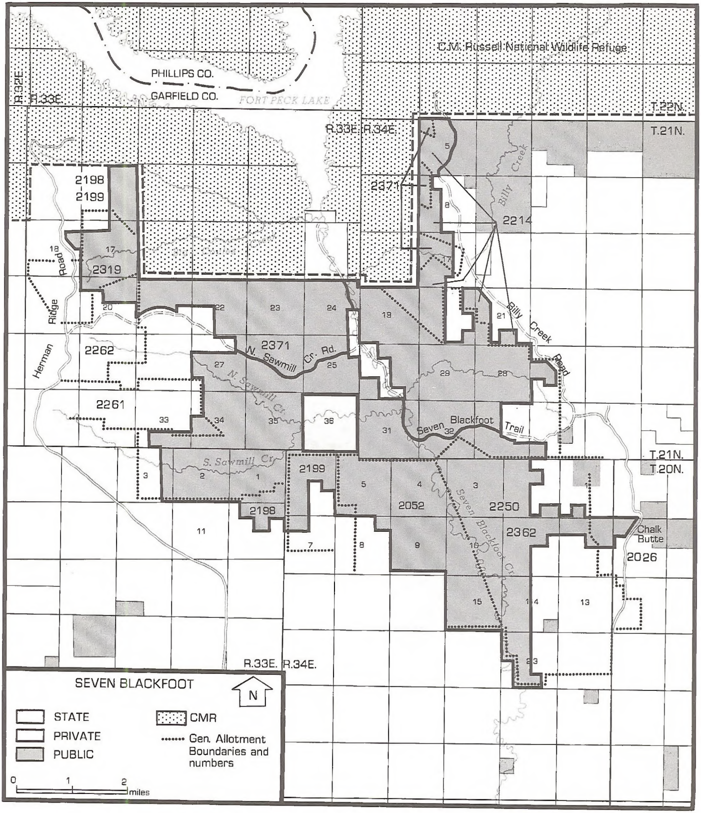
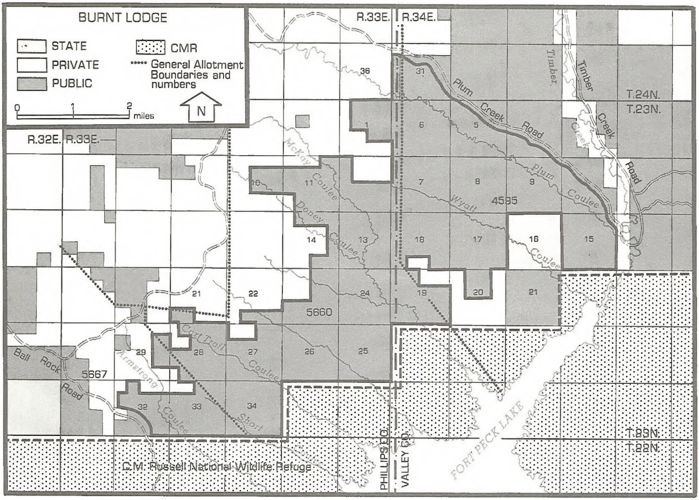

C.M. Russell National Wildlife Refuge
PHILLIPS CO.
GARFIELD CO.
FORT PECK LAKE
R.32E.
R.33E.
R.33E. R.34E.
T.22N.
T.21N.
T.21N.
T.20N.
2198
2199
2319
2262
2261
2371
2214
2199
2198
2052
2250
2362
2026
Herman Ridge Road
N. Sawmill Cr. Rd.
N. Sawmill Cr.
S. Sawmill Cr.
Billy Creek
Billy Creek Road
Seven Blackfoot Trail
Seven Blackfoot Cr.
Chalk Butte
R.33E. R.34E.
SEVEN BLACKFOOT
N
STATE
PRIVATE
PUBLIC
CMR
Gen. Allotment Boundaries and numbers
0
1
2
miles

FIGURE 3.12 BURNT LODGE (MT-065-278) LAND STATUS/ALLOTMENT BOUNDARY MAP


BURNT LODGE
STATE
PRIVATE
PUBLIC
CMR
General Allotment Boundaries and numbers
0
1
2
miles
N
R.33E.
R.34E.
R.32E.
R.33E.
T.24N.
T.23N.
T.23N.
T.22N.
Plum Creek Road
Timber
Timber Creek Road
Creek
McKay Coulee
Doney Coulee
Wyatt
Plum Coulee
Coulee
Cart Trail Coulee
Armstrong Coulee
Short
Ball Rock Road
4595
5660
5667
36
31
1
6
5
10
11
7
8
9
14
13
18
17
16
15
21
22
24
19
20
21
29
28
27
26
25
32
33
34
PHILLIPS CO.
VALLEY CO.
FORT PECK LAKE
C.M. Russell National Wildlife Refuge

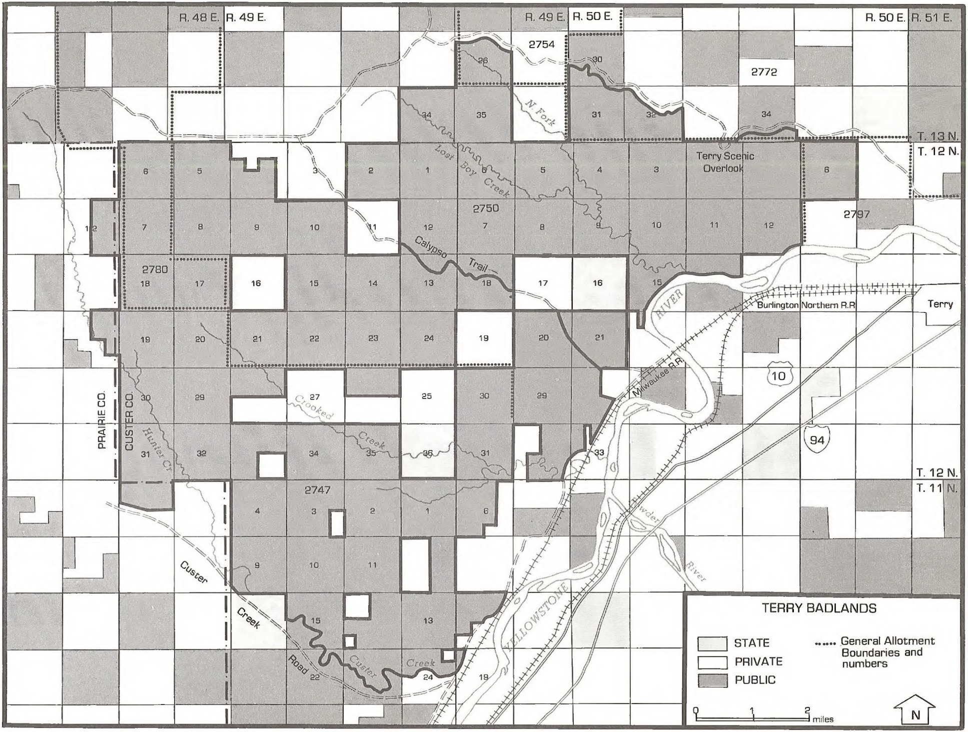

R. 48 E.
R. 49 E.
R. 49 E.
R. 50 E.
R. 50 E.
R. 51 E.
T. 13 N.
T. 12 N.
T. 12 N.
T. 11 N.
2754
2772
2750
2797
2780
2747
26
30
34
35
31
32
34
6
5
3
2
1
6
5
4
3
6
12
7
8
9
10
11
12
7
8
9
10
11
12
18
17
16
15
14
13
18
17
16
15
19
20
21
22
23
24
19
20
21
30
29
27
25
30
29
31
32
34
35
36
31
33
4
3
2
1
6
9
10
11
15
13
22
24
19
N. Fork
Lost Boy Creek
Calypso Trail
Terry Scenic Overlook
Terry
Burlington Northern R.R.
Milwaukee R.R.
RIVER
10
94
PRAIRIE CO.
CUSTER CO.
Hunter Cr
Crooked Creek
Custer Creek Road
Custer Creek
YELLOWSTONE
Powder River
TERRY BADLANDS
STATE
PRIVATE
PUBLIC
General Allotment Boundaries and numbers
0
1
2
miles
N

FIGURE 3.13 TERRY BADLANDS (MT-024-684) LAND STATUS/ALLOTMENT BOUNDARY MAP

VEGETATION

Vegetation in the units falls into three general vegetation types as discussed by Ross and Hunter (1976). The Dog Creek, Woodhawk, Stafford, Ervin Ridge, Cow Creek and Antelope Creek WSAs are in the Western Sedimentary Plains (10-14 inch precipitation zone, river breaks range site). The most common plants here (in order of dominance) are ponderosa pine, Rocky Mountain juniper, Douglas fir (on north slopes), bluebunch, western and thickspike wheatgrass, green needlegrass, prairie sandreed, basin wildrye, needleandthread, greasewood, big sagebrush, creeping juniper, native legumes and prairie Junegrass. (See Appendix 3.3 for the scientific names of these plants.)

The Musselshell Breaks, Bridge Coulee, Burnt Lodge, Seven Blackfoot and Billy Creek WSAs are in the Eastern Sedimentary Plains (10-14 inch precipitation zone, river breaks range site). The Musselshell Breaks and Bridge Coulee are on the Musselshell River while the others lie in the river breaks along the Fort Peck Reservoir. In addition to the plants mentioned above, the dominant plants in this vegetation type include little bluestem, nuttall saltbush, shadscale, saltbush and native legumes (Appendix 3.3).

The Terry Badlands are in the Eastern Sedimentary Plains (10-14 inch precipitation zone, badlands range site). The most common plants here (besides those mentioned above) are little bluestem, alkali sacaton, American vetch, plains muhly, sideoats grama, juniper and a stand of limber pine, one of the most easterly stands.

Threatened or Endangered Plants

There are no officially recognized threatened or endangered plant species in the WSAs. The only sensitive plant which could occur is the persistent sepal yellowcress (Appendix 3.3).

Noxious and Poisonous Plants

Several noxious plants may be found in the study areas. Presently there are no known concentrations being controlled, but Canada thistle, leafy spurge, dalmation toadflax, field bindweed and Russian knapweed could occur in the area.

Plants poisonous to livestock are also found in the WSAs but have not posed any major problems to date. These species are: low larkspur, white pointloco, deathcamas, cockleburr, ponderosa pine, greasewood, milk vetch, water hemlock, poison hemlock, halogeton and chokecherry. Some of these are only poisonous in certain seasons or under certain conditions.

Timber

Because of the scarcity of commercial-quality timber and the erodibility of the soils, there has been no commercial lumbering in either the Missouri Breaks or the Terry Badlands. Post cutting permits, however, have been issued in the past in the southwest corner of the Bridge Coulee WSA and in isolated spots in the Seven Blackfoot WSA where there have been fires. Fifty to one hundred posts were cut in the Seven Blackfoot WSA before cutting was suspended in July 1975 when a primitive area study was initiated.

Fire Suppression

BLM fire suppression has attempted to keep damage from wildfires as slight as possible by using retardant drops, helitack crews, ground pumpers and fire crews. A fire management plan for the entire Missouri Breaks ecosystem in the future will establish criteria for modified or limited supression areas. This plan would allow fires to burn under supervision, if the fire weren't endangering life, property or multiple use values.

Recent fires have burned parts of the Woodhawk, Bridge Coulee, Seven Blackfoot, Burnt Lodge and Billy Creek WSAs. Grasses in these areas have revegetated but timber is returning very slowly.

MINERALS

This section considers the present mineral production in each of the 12 WSAs and projects potential mineral development of petroleum (especially natural gas), coal and bentonite. Diatremes similar to diamond-bearing deposits of kimberlite can be found in two of the study areas. There is currently no mineral development of any kind in any of the WSAs, although there has been exploration in the past for oil and gas and the underground mining of coal for local use.

A general description of the geology of the Missouri Breaks and Terry Badlands areas can be found in the "Topography and Geology" Section of this chapter. Previous geological or mineral investigations of the units or vicinity are listed in Appendix 3.4.

The six wilderness study areas south of the Bears Paw Mountains along the Missouri River (Dog Creek, Stafford, Ervin Ridge, Woodhawk, Cow Creek and Antelope Creek) share similar geologic structure which could make the area a valuable source of petroleum reserves, particularly natural gas. The youngest geologic formations are shales, sandstone and siltstone formed when eastern Montana was periodically flooded by shallow seas in Cretaceous times. The seas gradually retreated eastwards, leaving deposits of fine-grained clays and silt which became the Telegraph Creek, Claggett Shale and Bearpaw Shale Formations (Figure 3.1). Sandy and silty, brackish to fresh water sediments were left on Cretaceous-age beaches and coastal plains, becoming the Eagle Sandstone and Judith River Formations.

The folding of the earth's surface, resulting in the Bears Paw Mountains north of the Missouri River, caused intense thrust faulting elsewhere in the area.

The Bears Paw uplift is a focal point of petroleum exploration because the shifting of formations trapped pockets of natural gas at depths of 1,500-2,000 feet, particularly in the Eagle Sandstone Formation and occasionally in the Judith River and Telegraph Creek Formations. According to the Fuel Resource Development Company (Fuelco), 2.2 billion cubic feet (BCF) of natural gas have been extracted as of December 1978 from the

28 successful wells in the area that form the Leroy Natural Gas Field. The company projects another 35-40 successful wells could be drilled in the 500-square miles around the Missouri River (from the PN Ferry to the Fred Robinson Bridge), producing perhaps an additional 10-16 BCF. Rice (1980) felt this field may even be as rich as the Tiger Ridge Field north of Havre, which has reserves currently estimated at 735 BCF. At the present price of $2.13 per thousand cubic feet, the Fuelco projected reserves would have a value of $21.3-$34 million. This value increases as Fuelco's gas price rises at 6% annually. For further information on the petroleum market, see the *Oil and Gas Environmental Assessment of BLM Leasing Program* (Lewistown District).

There is also a possibility that more natural gas is trapped in formations below the Telegraph Creek, as it is in the Bowdoin Dome Field northeast of the Missouri Breaks. In that field, gas is drawn from the Greenhorn and Carlile Shale Formations (Figure 3.1). Few wells in the Bears Paw area have been drilled deeper than 1,800 feet: the common practice is to terminate bores in the uppermost Niobrara Formation, 100-750 feet above the producing parts of the Greenhorn.

Industry sources also indicate a potential for oil discoveries in the Missouri Breaks because of its geologic structure. It is suspected that if oil were found, it would be very deep in formations of Jurassic Age or older. There have been no oil discoveries in or next to any of the six WSAs, and there is no known oil drilling presently in the area. For this reason, oil potential in the WSAs along the Missouri River is rated low to moderate.

The Missouri Breaks area also contains coal deposits. In general the Judith River Formation contains two beds of lignite (subbituminous coal), ranging from 0.6-2.5 feet thick in the area of the Fred Robinson Bridge. There are also deposits in the Eagle Sandstone Formation. A recent mineral survey conducted by the U.S. Geological Survey (USGS) and the Bureau of Mines (USBM) in the Charles M. Russell National Wildlife Refuge (CMR) estimated reserves of 190 million tons of coal in the Fred Robinson Bridge area, 13% of which is covered by less than 200 feet of overburden. Limited mining in the past has taken place in the area to meet the local needs of communities and ranches. The most productive of these underground mines was the Russell Mine that fed the Phillips Power Plant from 1914-1924. Two hundred thousand tons of coal were taken from it during the decade it was in operation (Erdman, Tempke 1963). All of the mines in the area were out of production by the 1930's and coal currently is not being mined in the six WSAs along the Missouri.

Bentonite can also be found in the Bearpaw Shale and Claggett Shale Formations in these six WSAs. There is doubt, however, that the bentonite in these six WSAs is of good enough quality to meet BLM's definition of a "locatable" mineral (i.e. a barrel yield greater than or equal to 80 with a water loss less than or equal to 17 milliliters).

The six other wilderness study areas in this Suitability Study/EIS lie further east and southeast around the Fort Peck Reservoir and along the Musselshell and Yellowstone Rivers (Figure 1.1). Of these six WSAs, Bridge Coulee, Musselshell Breaks, Billy Creek, Seven Blackfoot and Burnt Lodge share similar geology. The Bearpaw Shale Formation occurs in portions of the WSAs where streams have cut through younger sandstones and mudstones of the Fox Hills and Hell Creek Formations (Figure 3.1). These formations were deposited as the late Cretaceous Sea (which formed the Bearpaw Shale Formation) retreated eastward across Montana and was replaced by beach (Fox Hills) and river-deposited sediments (Hell Creek Formation). In the Seven Blackfoot, Billy Creek and Burnt Lodge WSAs, the yellowish Tullock Member of the Fort Union Formation caps the upper rim of the river breaks.

The younger, Tertiary sediments of the Fort Union Formation make up the geology of the Terry Badlands WSA. These layers were deposited in riverbeds, swamps and delta plains and include the yellowish rocks of the lowermost Tullock Member, the dark, shale badlands of the middle Lebo Member and the light tan sandstone and red clinker-capped buttes and rolling plains of the upper Tongue River Member (Figure 3.13).

Major natural gas reserves may be trapped in the Judith River and Eagle Sandstone Formations and in the Mosby Member of the Greenhorn Formation as is common further west (Rice and Shurr 1980). Wells would have to be drilled deeper than in the western Missouri Breaks area, and the daily flow rates of this resource may be low. Still widespread distribution of the gas could make it economical to extract.

The proximity of the Cat Creek Oil Field influences the petroleum potential rating of the Musselshell Breaks WSA. This field, one of the oldest in Montana, has produced since 1920 nearly 23 million barrels of oil from Cretaceous-age and older formations. Production has dropped greatly since the mid-20's, the field being in the "stripper stage" since 1958, but still produced 89,000 barrels from 58 wells in 1979.

Coal has been noted in the Tullock, Lebo and Tongue River Members of the Fort Union Formation, especially in the Terry Badlands WSA. Mineral potential by WSA follows.

No known geothermal resources have been identified or designated in any of the study areas.

Dog Creek South WSA

Dog Creek South contains no known geologic structures (KGSs). KGSs are a strong indicator of oil and gas potential. Only one dry wildcat well has been drilled in the vicinity but the proximity of this WSA to the Leroy Natural Gas Field (3 miles to the northeast) and its similar geologic structure to the Leroy and Sherrard Fields cause it to be rated high for natural gas potential. Oil potential is rated low to moderate, as there have been no discoveries to date in the area although it is structurally possible. The WSA is currently of extreme interest to the petroleum industry, 99.2% of it being under oil and gas leases (Dog Creek South Oil and Gas Lease Map, Figure 3.14).

Samples from four mines that took coal from the Judith River Formation near Dog Creek averaged 46.9% fixed carbon, 36.7% volatiles and produced 10,515 BTU/lb. (Hubbard 1963). Samples from two mines near the WSA that dug coal from the Eagle Sandstone Formation averaged roughly the same: 47.8% fixed carbon, 38.5% volatiles, producing 10,845 BTU/lb. (Hubbard 1963). Both samples were considerably degraded by bone or shale partings and high moisture content. Sulphur measurements were not made at the time but BLM planning documents describe the coal from both formations as having high sulphur content (BLM, *Fergus Planning Unit URA*, 1977).

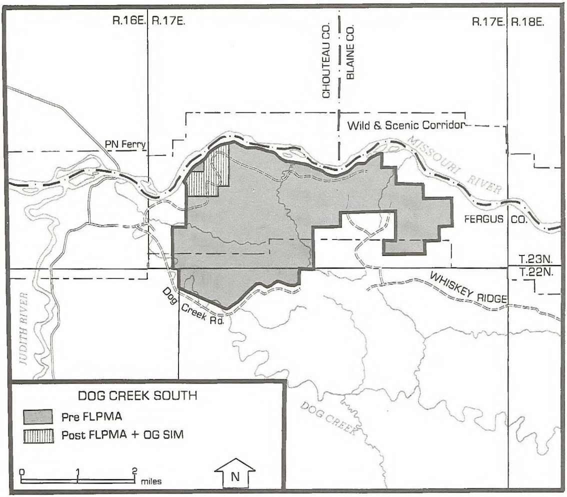
With the present standards of the Clean Air Act and technology, the potential of coal in the Dog Creek South WSA becoming commercially attractive is low, even though it is part of the Lewistown Coal Field. The low heating value and poor storage characteristics render the Judith River beds undesirable beyond the use of local residents (Erdman and Lemke 1963). The coal is poorly accessible, in comparatively small, thin layers with probable high sulphur content.

Bentonite beds in the Dog Creek South WSA are too thin and the mineral of too poor quality to be commercially feasible.

Mineral Potential Summary
Dog Creek South WSA

Natural Gas	Oil	Coal	Bentonite
High	Low to Moderate	Low	Low

FIGURE 3.14 DOG CREEK SOUTH (MT-068-244) LEASES AND CLAIMS MAP



Stafford WSA

The Stafford WSA is next to the western edge of the Leroy Field and there is also a producing natural gas well 3 miles to the east. For these reasons Stafford has a high potential to produce natural gas. Oil potential is rated low to moderate because of the lack of discoveries even though it is structurally possible. The petroleum industry has indicated its interest by leasing or applying for oil and gas leases on 84.9% of the land in this WSA (Figure 3.15).

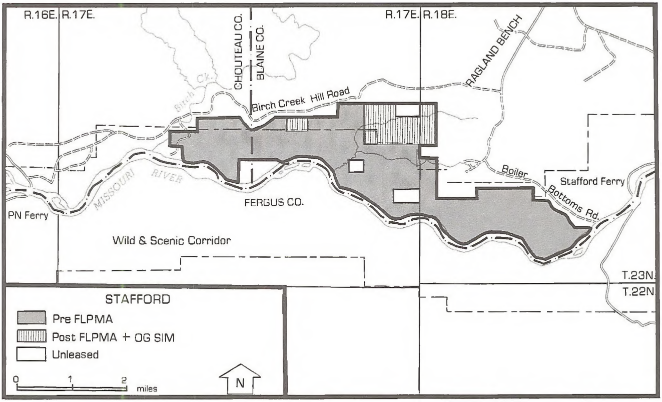
The Stafford WSA is part of the North Central Coal Field and USGS has classified 320 acres of it as coal lands. Coal was extracted in the vicinity during the 1920's from the John McCellan Mine, 3½ miles northeast. It produced subbituminous coal from a bed in the Judith River Formation 5¾ feet thick with 19-inch shale partings. A sample of this coal tested as 13.1% ash, producing 10,950 BTU/lb., roughly comparable to the samples taken from the mines near Dog Creek. The coal in this WSA is of high moisture content, low heating value, probable high sulphur content, poor storage characteristics, thin beds and generally inaccessible. For these reasons, coal potential in the Stafford WSA is rated low.

Bentonite potential is low because the beds are usually too thin and of poor quality to be commercially attractive.

Mineral Potential Summary
Stafford WSA

Natural Gas	Oil	Coal	Bentonite
High	Low to Moderate	Low	Low

FIGURE 3.15 STAFFORD (MT-066-250) LEASES AND CLAIMS MAP


R.16E.
R.17E.
CHOUTEAU CO.
BLAINE CO.
R.17E.
R.18E.
RAGLAND BENCH
Birch Ck.
Birch Creek Hill Road
MISSOURI RIVER
Boiler Bottoms Rd.
Stafford Ferry
FERGUS CO.
PN Ferry
Wild & Scenic Corridor
T.23N.
T.22N.
STAFFORD
Pre FLPMA
Post FLPMA + OG SIM
Unleased
0
1
2
miles
N

Ervin Ridge WSA

Two unnamed KGSs are included in this WSA (T. 24 N., R. 19 E., Section 22 and T. 24 N., R. 20 E., Section 32). Nineteen hundred acres of the unit in R. 19 E. are considered by industry as part of the Leroy Field. Although six dry holes have been drilled in the WSA, shut-in natural gas wells (successful wells that have been capped until a pipeline is built) are located within a mile of its north, east and west boundaries. Natural gas potential is rated high. The oil potential is low to moderate since oil discoveries are structurally possible although there have been no discoveries in the area. The petroleum industry has leased 89.1% of this unit (Figure 3.16).

Coal beds in the Ervin Ridge WSA are of no greater extent or better quality than elsewhere in the area. The disadvantages of coal from the Judith River Formation and the difficulties of access make this mineral commercially unattractive given present-day air standards and technology. Coal is not being mined in this WSA now, and its coal potential is low.

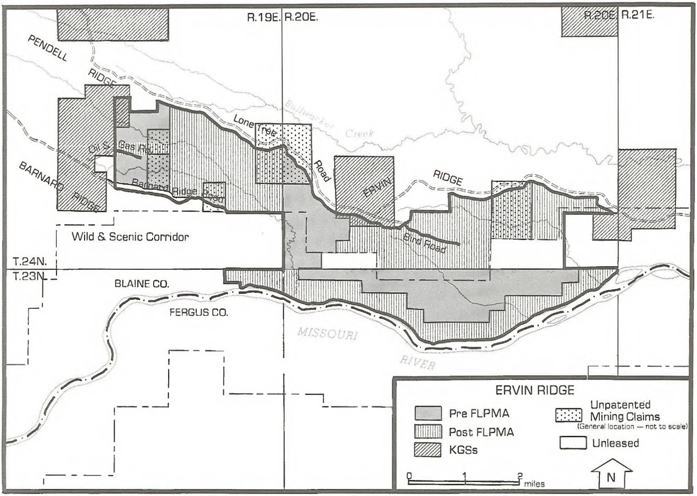
No bentonite is being worked in the Ervin Ridge WSA and the quality and quantities of the mineral suggest the deposits will remain undeveloped.

Ervin Ridge also contains diatremes which could bear diamonds. There are nine mining claims in the Ervin Ridge WSA but no diamonds have been discovered to date and the potential for such discoveries is low.

Mineral Potential Summary
Ervin Ridge WSA

Natural Gas	Oil	Coal	Bentonite	Diatremes
High	Low to Moderate	Low	Low	Low

FIGURE 3.16 ERVIN RIDGE (MT-066-253) LEASES AND CLAIMS MAP


R.19E.
R.20E.
R.20E.
R.21E.
PENDELL RIDGE
BARNARD RIDGE
Oil & Gas Rd.
Lone Tree Road
Bullwacker Creek
ERVIN RIDGE
Barnard Ridge Road
Bird Road
Wild & Scenic Corridor
T.24N.
T.23N.
BLAINE CO.
FERGUS CO.
MISSOURI RIVER
ERVIN RIDGE
Pre FLPMA
Post FLPMA
KGSs
Unpatented Mining Claims
(General location — not to scale)
Unleased
0
1
2
miles
N

Woodhawk WSA

The Woodhawk WSA has no KGSs and no test wells have been drilled. The lack of a collection pipeline on the south side of the river (Figure 1.1) has probably discouraged exploration. Still the proximity to the Leroy Natural Gas Field and its similar geologic structure suggest that pockets of natural gas are trapped beneath the surface. Natural gas potential is therefore rated high. There have been no oil discoveries in the area, although it is structurally possible, so the potential is low to moderate. See Figure 3.17 for the Woodhawk WSA Minerals Map.

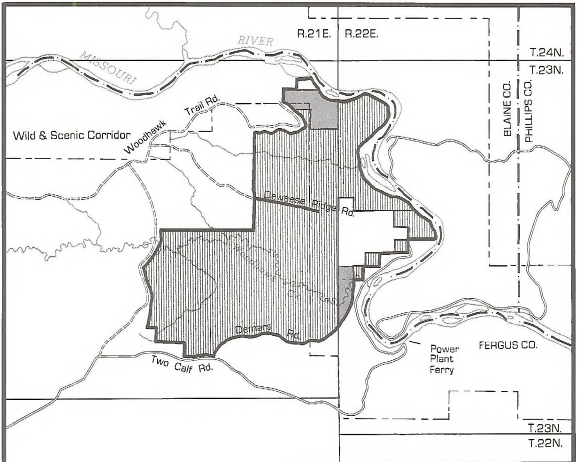
Woodhawk is part of the Lewistown Coal Field. During the 1920's, the Van Buskirk Mine (just north of the WSA) was reported to have lignite beds from 5-10 feet thick (Stanton and Hatcher 1905); no coal is being mined now. This coal shares the disadvantages of coal in the Judith River Formation in general, being found in thin, small layers, with high moisture and sulphur content and low heating value, all which make the mineral uneconomical to mine. The low quality and quantity of the coal is compounded by the remoteness of the area. Coal potential is thus rated low.

Bentonite is of poor quality and the beds too thin to be worth developing in this WSA.

Mineral Potential Summary
Woodhawk WSA

Natural Gas	Oil	Coal	Bentonite
High	Low to Moderate	Low	Low

FIGURE 3.17 WOODHAWK (MT-068-246) LEASES AND CLAIMS MAP


R.21E.
R.22E.
T.24N.
T.23N.
MISSOURI RIVER
BLAINE CO.
PHILLIPS CO.
Woodhawk Trail Rd.
Wild & Scenic Corridor
Deweese Ridge Rd.
Woodhawk Cr.
Demars Rd.
Two Calf Rd.
Power Plant Ferry
FERGUS CO.
T.23N.
T.22N.
WOODHAWK
Pre FLPMA
Post FLPMA + OG SIM
Unleased
0
1
2
miles
N

Cow Creek WSA

One wildcat well (of seven drilled) has produced a "show" of natural gas in this WSA. Its nearness and similar geological structure to the Leroy Field suggest that the WSA is a good risk for further oil and gas exploration. Industry interest is indicated by the fact that 91.7% of the lands in the WSA are leased (Figure 3.18). The potential for natural gas is rated high. Oil has a low to moderate potential for much the same reasons as in the WSAs previously discussed: no oil has been discovered to date in the area although discoveries are structurally possible.

The Cow Creek WSA is part of the North Central Coal Field and has 1,200 acres classified as coal lands by USGS. The coal is of too poor quality and of too limited quantity to merit more than a low rating for potential. None is presently being extracted.

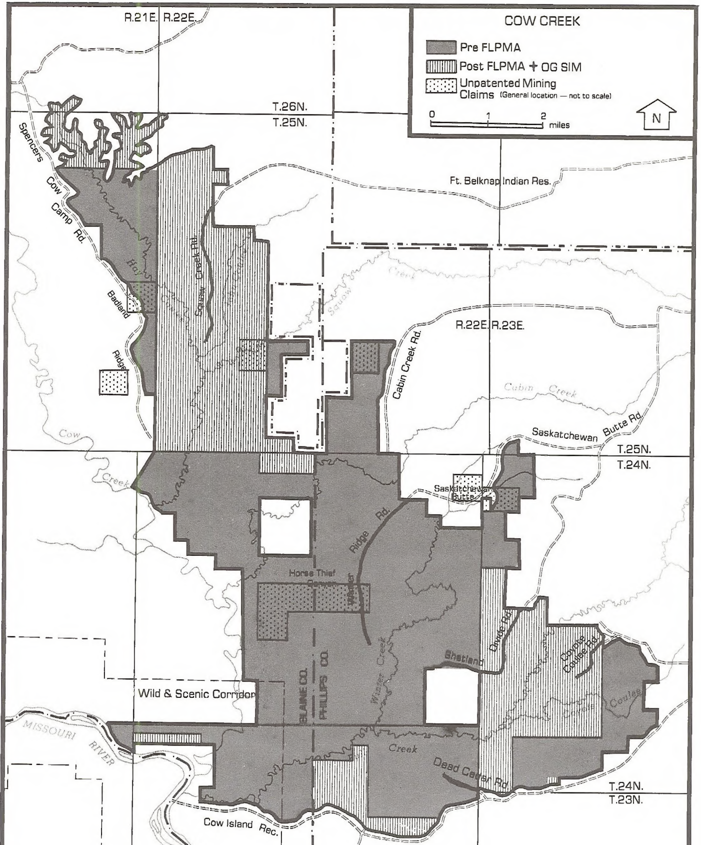
Bentonite in this WSA is of too poor quality and of too small quantity to be economically mined.

Like the Ervin Ridge WSA, Cow Creek has diatremes similar to intrusions in which diamonds can be found. Nine mining claims have been filed in this WSA. No diamonds have been discovered and the potential is rated low.

Mineral Potential Summary
Cow Creek WSA

Natural Gas	Oil	Coal	Bentonite	Diatremes
High	Low to Moderate	Low	Low	Low

FIGURE 3.18 COW CREEK (MT-066-256) LEASES AND CLAIMS MAP


COW CREEK
Pre FLPMA
Post FLPMA + OG SIM
Unpatented Mining Claims (General location — not to scale)
0
1
2
miles
N
R.21E. R.22E.
T.26N.
T.25N.
Spencers Cow Camp Rd.
Ft. Belknap Indian Res.
Squaw Creek Rd.
Badland Ridge
R.22E. R.23E.
Cabin Creek Rd.
Cabin Creek
Saskatchewan Butte Rd.
T.25N.
T.24N.
Cow Creek
Saskatchewan Butte
Ridge Rd.
Horse Thief Canyon
Winter
Winter Creek
Shetland Divide Rd.
Coyote Coulee Rd.
Coyote Coulee
Wild & Scenic Corridor
BLAINE CO.
PHILLIPS CO.
MISSOURI RIVER
Creek
Dead Cayuse Rd.
T.24N.
T.23N.
Cow Island Rec.
FERGUS CO.

Antelope Creek WSA

The Antelope Creek WSA is rated high for potential natural gas since it has a similar geologic structure to the Leroy Field. No KGSs are found in the WSA and six dry holes have been drilled in the vicinity. The petroleum industry has 72.5% of the lands in the Antelope Creek WSA leased for oil and gas (Figure 3.19). Oil potential is rated low to moderate since discoveries are structurally possible although there have been none yet in the Bears Paw area.

The westernmost part of Antelope Creek is classified as coal lands by the USGS. A sample of coal taken during a USGS/USBM mineral survey in the CMR adjacent to this WSA tested:

Moisture Content	24%
Ash	31.6%
Sulphur	1.5%
Heat Production	6,520 Btu/lb. (dry)

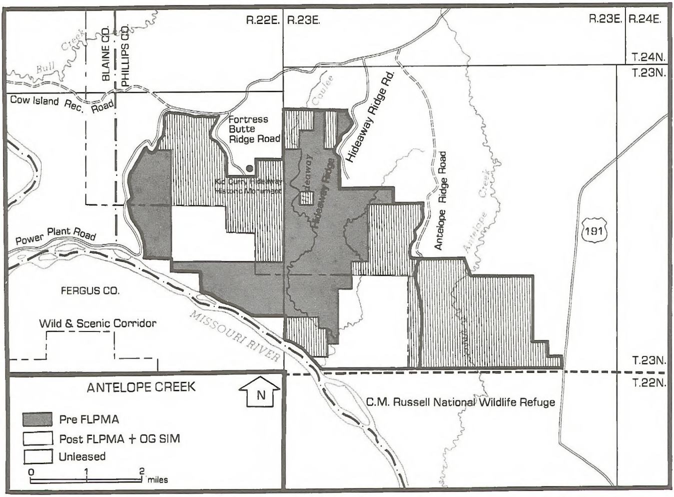
As in the other WSAs, this mineral is of too poor quality and in too limited quantity to be economically mined. None is being mined in the WSA now. Coal development potential is thus rated low.

Antelope Creek has more potential for bentonite development. BLM recorded the presence of a 2-3 foot thick bed of olive-green about 100-150 feet above the base of the Bearpaw Shale Formation which outcrops along the Missouri River (BLM, *Physical Profile*, 1970). There are 6 other beds (from 6-24 inches thick) in the 200-foot section above the green bed. Samples from the olive-green bed in the USGS/USBM mineral survey showed the mineral suitable for molding foundry sand and for forming iron-ore pellets but unsuitable for petroleum drilling mud (Frahme 1979). For these reasons potential of the bentonite in the Antelope Creek WSA is rated moderate. No bentonite is currently being worked in this WSA.

Mineral Potential Summary
Antelope Creek WSA

Natural Gas	Oil	Coal	Bentonite
High	Low to Moderate	Low	Moderate

FIGURE 3.19 ANTELOPE CREEK (MT-065-266) LEASES AND CLAIMS MAP


R.22E.
R.23E.
R.23E.
R.24E.
T.24N.
T.23N.
T.23N.
T.22N.
Bull Creek
BLAINE CO.
PHILLIPS CO.
Cow Island Rec. Road
Fortress Butte Ridge Road
Coulee
Hideaway Ridge Rd.
Hideaway
Hideaway Ridge
Kid Curry Hideaway Historic Monument
Antelope Ridge Road
Antelope Creek
191
Power Plant Road
FERGUS CO.
Wild & Scenic Corridor
MISSOURI RIVER
C.M. Russell National Wildlife Refuge
ANTELOPE CREEK
N
Pre FLPMA
Post FLPMA + OG SIM
Unleased
0
1
2
miles

Bridge Coulee WSA

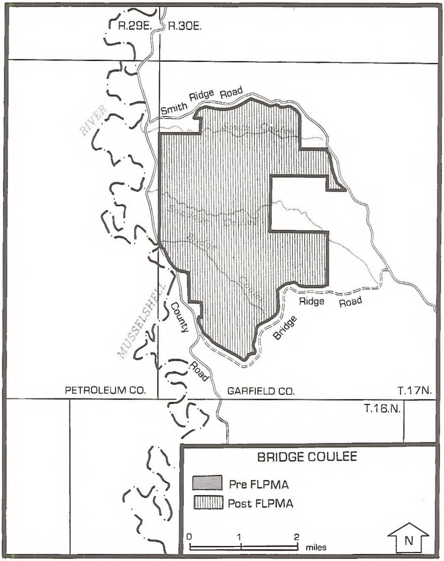
The Bridge Coulee WSA holds no KGSs. No test holes have been drilled within several miles of the WSA. Rice (1979) described strata of gas-bearing potential in the CMR north of Bridge Coulee; similar strata can be found in the WSA itself. Industry interest is shown in the fact that 87.6% of the lands in the Bridge Coulee WSA are under oil or gas leases (Figure 3.20). Gas potential is rated moderate. Oil potential is rated low.

The Bridge Coulee WSA does not contain significant coal deposits, so the potential of this mineral is low.

Mineral Potential Summary
Bridge Coulee WSA

Natural Gas	Oil	Coal
Moderate	Low	Low

FIGURE 3.20 BRIDGE COULEE (MT-024-675) LEASES AND CLAIMS MAP


R.29E.
R.30E.
Smith Ridge Road
RIVER
MUSSELSHELL
County Road
Ridge Road
Bridge
PETROLEUM CO.
GARFIELD CO.
T.17N.
T.16.N.
BRIDGE COULEE
Pre FLPMA
Post FLPMA
0
1
2
miles
N

Musselshell Breaks WSA

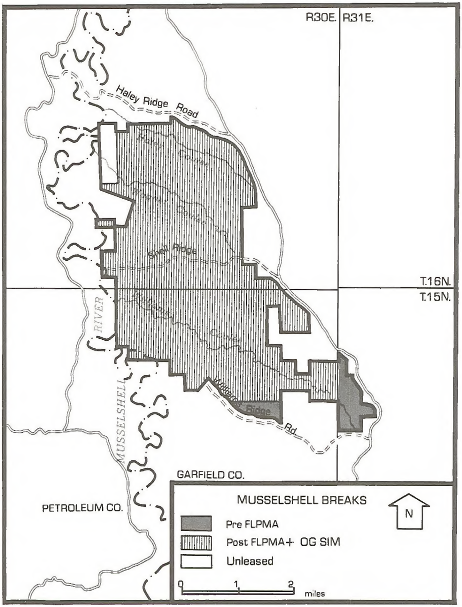
The Musselshell Breaks WSA contains no KGSs. No test holes have been drilled inside the WSA but there have been two dry holes drilled within ½ mile of the southeastern boundary. Still, since the study area is only 2 miles north of the geologic structure forming the Cat Creek Oil Field and the WSA is underlain by formations which can produce oil, the area is seen as promising by the petroleum industry. Oil and gas leases on 98.6% of the unit have been let (Figure 3.21). For this reason both oil and natural gas potential ratings are moderate.

No significant coal deposits are present in the area.

Mineral Potential Summary
Musselshell Breaks WSA

Natural Gas	Oil	Coal
Moderate	Moderate	Low

FIGURE 3.21 MUSSELSHELL BREAKS (MT-024-677) LEASES AND CLAIMS MAP


R30E.
R31E.
Haley Ridge Road
Shell Ridge
T.16N.
T.15N.
RIVER
MUSSELSHELL
Williams Ridge Rd.
GARFIELD CO.
PETROLEUM CO.
MUSSELSHELL BREAKS
N
Pre FLPMA
Post FLPMA+ OG SIM
Unleased
0
1
2
miles

Billy Creek WSA

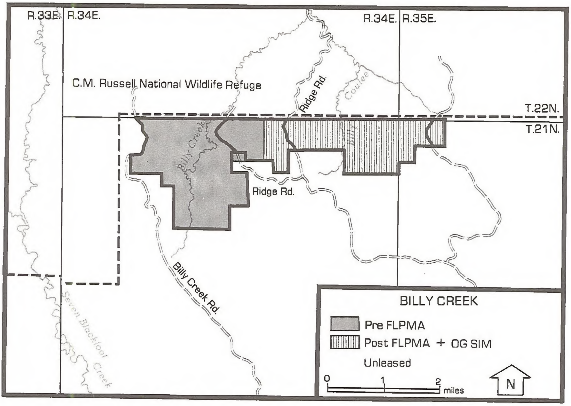
No test wells have been drilled in the WSA and it has no KGSs. Still, this WSA is rated moderate for natural gas discoveries as several gas-rich formations underlie the area. Oil potential is low, mainly because of the lack of discoveries in the vicinity. The petroleum industry has 73.4% of the WSA under oil and gas leases (Figure 3.22).

Coal deposits are located in the Tullock Member of the Fort Union Formation in the unit. Bed "1" in the CMR north of the WSA appears to extend into the Billy Creek but is too thin (under 5 feet) and of too poor quality (33-52% ash, 1.1-1.4% sulphur, producing 3,250-5,590 BTU/lb.) to be considered economical with present technology and air standards (Miller et al. 1979). Therefore, the coal potential is low.

Mineral Potential Summary
Billy Creek WSA

Natural Gas	Oil	Coal
Moderate	Low	Low

FIGURE 3.22 BILLY CREEK (MT-024-633) LEASES AND CLAIMS MAP



Seven Blackfoot WSA

The Seven Blackfoot WSA holds no KGSs. The one test well drilled there was dry. Another dry well was drilled a mile from the WSA boundary. This study area is still classified as having undiscovered oil and gas potential, mainly because of discoveries to the north (the Bowdoin Natural Gas Field), west (the Leroy and Sherrard Natural Gas Fields) and south (the Cat Creek Oil Field). Gas is more likely to be discovered than oil. The interest of the petroleum industry is indicated by the fact that oil and gas leases have been issued on 94.5% of the lands in the WSA (Figure 3.23). The potential oil rating is low while gas is rated moderate.

The coal-bearing Tullock Member of the Fort Union Formation underlies part of the Seven Blackfoot WSA. A study in the CMR next to the WSA detailed a coal deposit (the "Z" Bed) at the base of the Tullock about 2½ feet thick, with a 1½-foot parting. Tests of this coal found 60% ash content, a range of 0.5-2.4% sulphur and produced 1,980-2,630 BTU/lb. Reserves in the CMR were not calculated because of the high ash content and the low heating value. Several other thin beds lie higher in the member.

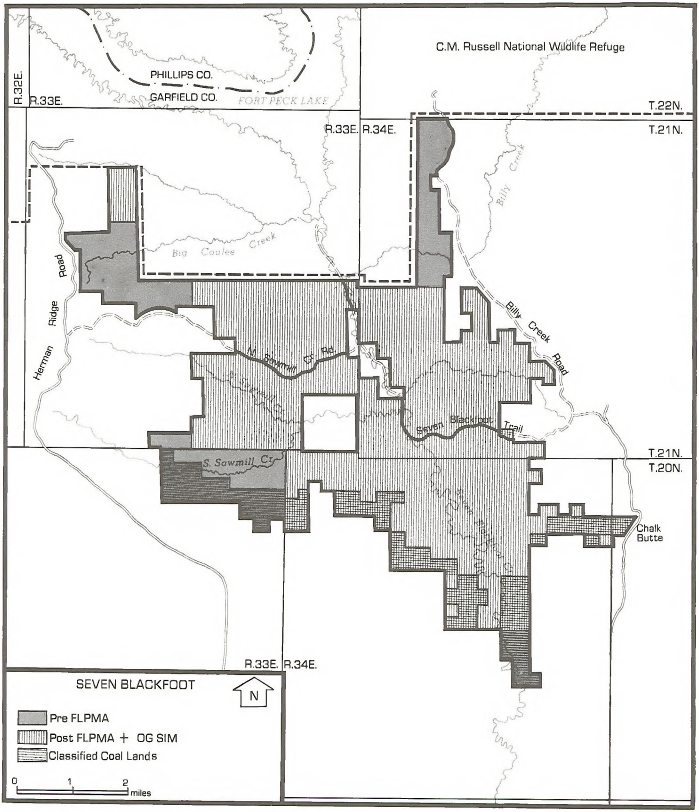
One small stripping operation (the Kariotis Mine) took coal for local use 0.7 miles south of the WSA. There the "Z" Bed was 3.3 feet thick (George Mowat, USGS, Personal Communication).

In general, the beds are too thin and the coal of too poor quality to make extraction economical. The coal potential is therefore low. There is some possibility of local use.

Mineral Potential Summary
Seven Blackfoot WSA

Natural Gas	Oil	Coal
Moderate	Low	Low

FIGURE 3.23 SEVEN BLACKFOOT (MT-024-657) LEASES AND CLAIMS MAP


C.M. Russell National Wildlife Refuge
PHILLIPS CO.
GARFIELD CO.
FORT PECK LAKE
R.32E.
R.33E.
R.33E. R.34E.
T.22N.
T.21N.
T.21N.
T.20N.
Big Coulee Creek
Billy Creek
Herman Ridge Road
Billy Creek Road
N. Sawmill Cr. Rd.
N. Sawmill Cr.
Seven Blackfoot Trail
S. Sawmill Cr.
Seven Blackfoot Cr.
Chalk Butte
R.33E. R.34E.
SEVEN BLACKFOOT
N
Pre FLPMA
Post FLPMA + OG SIM
Classified Coal Lands
0
1
2
miles

Burnt Lodge WSA

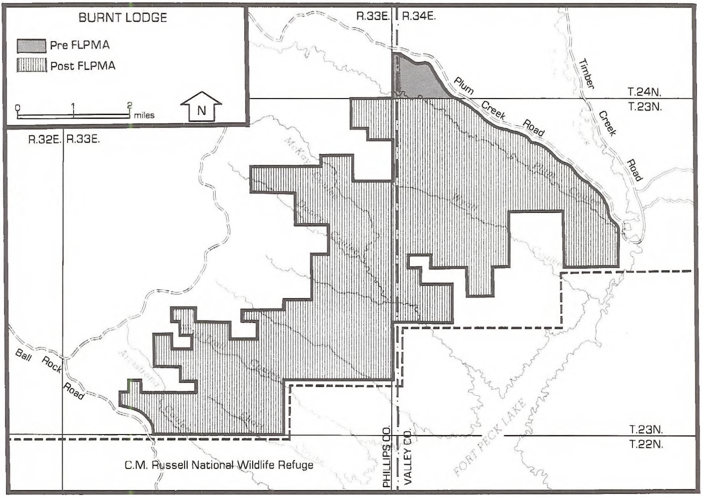
No test holes have been drilled in the Burnt Lodge WSA and it contains no KGSs. Industry interest in the WSA is indicated by the fact that 100% of Burnt Lodge is under oil and gas lease, most likely because of natural gas discoveries elsewhere in the region (Figure 3.24). Potential for natural gas is rated moderate as gas-bearing formations underlie the area. Oil potential is seen as less likely, because of the lack of discoveries in the vicinity. Thus it is rated low.

There may be coal in the WSA since the coal-bearing Tullock Member of the Fort Union Formation is exposed. The study in the CMR next to the WSA found the "Z" coal bed at the base of the Tullock but samples proved high in ash content and low in heating value, so reserves were not calculated. Several other thin beds lie higher in the Tullock Member. The potential of coal in this unit is low since the thin beds of poor quality coal make extraction uneconomical.

Mineral Potential Summary
Burnt Lodge WSA

Natural Gas	Oil	Coal
Moderate	Low	Low

FIGURE 3.24 BURNT LODGE (MT-065-278) LEASES AND CLAIMS MAP


BURNT LODGE
▦ Pre FLPMA
▥ Post FLPMA
0
1
2
miles
N
R.33E.
R.34E.
R.32E.
R.33E.
T.24N.
T.23N.
T.23N.
T.22N.
Plum Creek Road
Timber Creek Road
Ball Rock Road
McKay
Plum
FORT PECK LAKE
PHILLIPS CO.
VALLEY CO.
C.M. Russell National Wildlife Refuge

Terry Badlands WSA

Although on the western edge of the petroleum-rich Williston Basin, this WSA contains no KGSs. Two test holes were drilled in the Terry Badlands, both dry. Three other dry holes have been drilled a mile or less outside the WSA boundary. While subtle structural traps (common in places in the Williston Basin) may be present in the WSA, there are no known subsurface traps. Industry has oil and gas leases on 100% of the lands in the WSA (Figure 3.25). Because of the lack of discoveries in the vicinity to date, both natural gas and oil potential are rated low.

Meadowlark Farms, Inc. (Amax) has applied for coal Preference Right Leases (PRLAs) on 7,390 acres of this WSA. As part of the leasing process, the corporation had to prove to USGS that coal lay in sufficient quantities under the Terry Badlands to warrant mining. The coal considered for mining in the PRLA is the "U" Bed (or "Big Dirty") which marks the base of the Lebo Member in the Fort Union Formation, exposed in the southeastern part of the WSA. Amax estimated that the "U" Bed, where it was over 10 feet thick, held 163 million tons of coal under less than 150 feet of overburden. The average of samples Amax obtained from lignite in this bed showed 31.18% fixed carbon, 25.37% volatiles, 0.32% sulphur, 17.9% ash (high compared to other coal in the Fort Union Formation that runs between 5-10% ash content), producing 6,513 BTUs/lb.

There are discrepancies between Amax's study and one by USGS which reviewed the initial showing. Amax still has to prove commercial quantities of coal exist before the lands will be leased.

The "H-J" Bed covers about 600 acres in the northwestern corner of the WSA in the Tongue River Member (Figure 3.13). This bed is estimated to contain coal 10-15 feet thick under less than 150 feet of overburden, which would amount to reserves of 10-15 million tons. The "H-J" zone has not been tested yet, but is thought to be of higher quality than that of the "U" Bed since coal from the Tongue River Member usually is better than that from the Lebo.

USGS has conducted coal drilling and coring in the Terry Badlands which should better delineate reserves. Current information indicates the "U" Bed is between 17-33 feet thick in the vicinity of the PRLA (USGS, *Preliminary Geologic Report—Terry Badlands Wilderness Study Area*, 1982).

The coal, being lignitic, would most likely have to be used for mine-mouth conversion into electricity (such as at Colstrip), into synthetic fuels or coal gasification. Present air standards would tend to discourage conversion. Coal of much better quality and much more accessible lies throughout the region. While coal in the "U" Bed lies a few miles from the Yellowstone River and from rail transportation, reserves in the "H-J" Bed are more remote and would therefore be more difficult to transport. The coal potential of this unit is thus rated moderate.

Mineral Potential Summary
Terry Badlands WSA

Natural Gas	Oil	Coal
Low	Low	Moderate

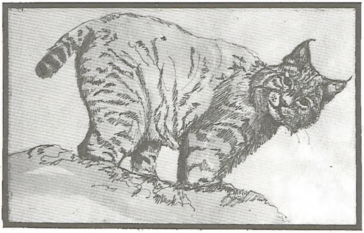
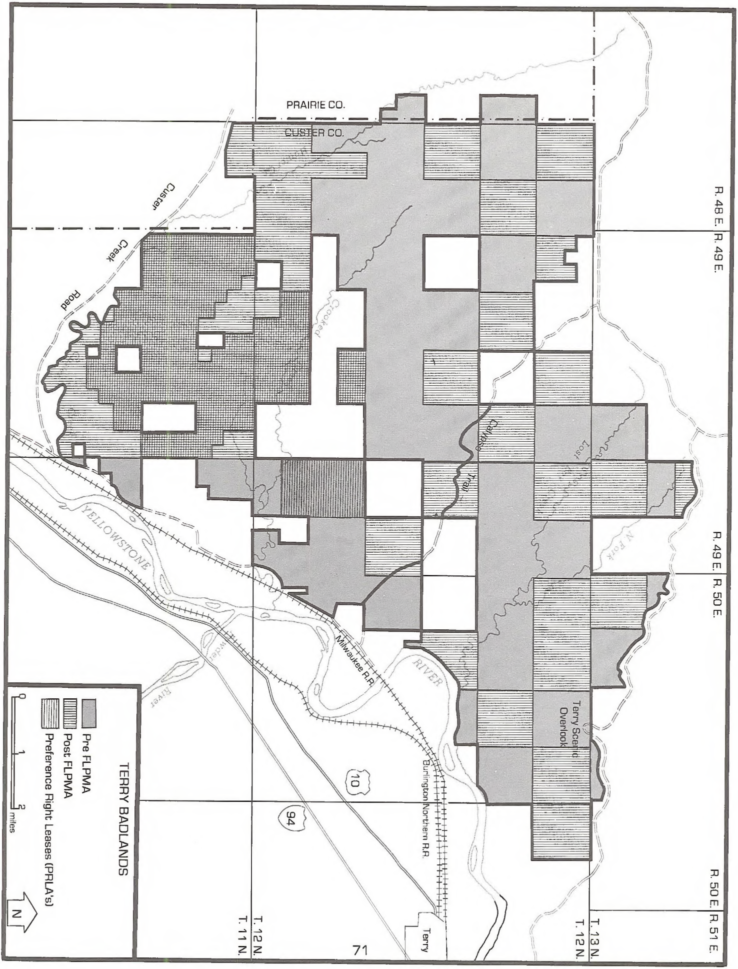


FIGURE 3.25 TERRY BADLANDS (MT—024-684) LEASES AND CLAIMS MAP


PRAIRIE CO.
CUSTER CO.
Custer Creek Road
Crooked
Calypso Trail
Lost
N Fork
YELLOWSTONE RIVER
Powder River
Milwaukee R.R.
Burlington Northern R.R.
10
94
Terry
Terry Scenic Overlook
R. 48 E.
R. 49 E.
R. 49 E.
R. 50 E.
R. 50 E.
R. 51 E.
T. 13 N.
T. 12 N.
T. 12 N.
T. 11 N.
TERRY BADLANDS
Pre FLPMA
Post FLPMA
Preference Right Leases (PRLA's)
0
1
2
miles
N

LAND STATUS AND USE

None of the 12 WSAs are near towns and there will probably be no urban, residential, commercial or industrial expansion around their boundaries. A few parts of the units are marginally suitable for farming.

The State of Montana owns all surface and mineral rights on a total of 3,200 acres within three of the WSAS. Except for a few stock watering ponds, minor oil and gas exploration and vehicle ways, these lands are similar to surrounding public lands. State lands are subject to the development and access requirements outside Federal jurisdiction. State inholdings (see Glossary) are open to mineral leasing and access to them would be across public lands. There are no state lands in the other nine study areas.

There are 4,920 acres of privately-owned land within the Terry Badlands and 371 acres in Seven Blackfoot, with no private inholdings in the other 10 study areas. Except for a few stock watering areas and vehicle ways, the private inholdings are undeveloped and are similar to surrounding public lands. Private inholdings are subject to development and reasonable access which would be across public lands.

Public lands in the 12 WSAs total 170,200 acres. (None have been surveyed so these figures are accurate to the nearest 50 acres.) Some changes from BLM's *Final Decision: Montana Wilderness Inventory* come from recalculating acreages. Table 3.4 details land ownership within all 12 WSAs.

Withdrawals, Easements and Rights-of-way

Withdrawals for power site reserves and classifications are public lands administered by BLM. Power site withdrawals give the rights to the withdrawing agency to authorize or construct power projects.These lands could be recommended for wilderness designation except where a specific project has been authorized or constructed by the withdrawing agency. Table 3.5 shows the location and size of all withdrawals in the study areas. No specific projects have been authorized or constructed.

A coal Preference Right Lease Application (see "Minerals" in this chapter) overlaps part of the southwest corner of the Terry Badlands: 7,390 of 19,215 acres of this PRLA are inside this WSA. Other special permits or rights-of-way (R/W) grants in the WSAs are:

—A Recreation and Public Purposes Lease of 42.55 acres in the Terry Badlands WSA to Prairie County for a scenic overlook

—Along the western boundary of Bridge Coulee, a buried telephone R/W extending .7 miles

—A 30-foot R/W for an irrigation ditch in the Cow Creek WSA (T. 24 N., R. 23 E., Sections 5 and 6; T. 25 N., R. 23 E., Section 31)

—In the Antelope Creek WSA, a 100-foot powerline R/W covering 1.25 miles. The old line (of which nothing remains) transported power from the now abandoned Phillips Power Plant to Zortman in the Little Rocky Mountains

—An underground telephone line R/W next to county road along one mile of the eastern boundary of the Musselshell Breaks WSA

Table 3.6 shows the number of permanent improvements by WSA.

Table 3.7 shows the boundary ownership around each of the study areas. (Figures 3.1-3.12 detail land status in and adjacent to the WSAs.) County roads provide guaranteed access to several, as do the Missouri and Yellowstone Rivers where they form the boundary of WSAs. Access through state or private lands adjacent to the WSAs, however, is not guaranteed.

TABLE 3.4: LAND OWNERSHIP IN THE WSAs

Ownership		Dog Creek South	Staf-ford	Ervin Ridge	Wood-hawk	Cow Creek	Antelope Creek	Bridge Coulee	Mussel-shell Breaks	Billy Creek	Seven Black-foot	Burnt Lodge	Terry Bad-lands
Private Inholdings	Acre	0	0	0	0	0	0	0	0	0	371	0	4,920
	%										1.7		9.8
State Inholdings	Acre	0	0	0	0	1,280	0	0	0	0	640	0	1,280
	%					3.0					3.6		2.5
Public Lands 1)	Acre	5,150	4,800	10,200	8,100	34,050	12,350	5,900	8,650	3,450	20,250	13,850	43,450
	%	100.0	100.0	100.0	100.0	96.4	100.0	100.0	100.0	100.0	95.2	00.0	86.4
Total	Acre	5,150	4,800	10,200	8,100	35,330	12,350	5.900	8,650	3,450	21,261	13,850	49,650

[1] All public lands acreages are unsurveyed so they are estimated to the nearest 50 acres. In some cases these acreages vary slightly from those in the Wilderness Final Decision because of a closer calculation.

Source: BLM, 1981

TABLE 3.5: WITHDRAWALS AND RIGHTS-OF-WAY IN THE WSAs

Withdrawl -Rights-of-way		Dog Creek South	Staf-ford	Ervin Ridge	Wood-hawk	Cow Creek	Antelope Creek	Bridge Coulee	Mussel-shell Breaks	Billy Creek	Seven Black-foot	Burnt Lodge	Terry Bad-lands
Power Site Reservation	Acre % of WSA	0	0	0	0	0	285 2.3	5 *	424 4.9	0	0	0	0
Power Site Classification	Acre % of WSA	1,019 19.8	1,787 37.2	1,774 17.4	1,029 12.7	552 1.6	488 4.0						
Withdrawal Coal Reservation	Acre % of WSA										2,748 13.6		
Recreation and Public Purpose Permit	Acre % of WSA												43 *
Powerline Rights-of-Way	Number of Miles					2 3.0	1 1.25	1 2.5	—				
Other Rights-of-Way	Number of Miles					1 1.1		1 0.7	1 1.0				

*Less than .01% of WSA.

Source: BLM, 1981

TABLE 3.6: PERMANENT IMPROVEMENTS BY WSA

Improvements		Dog Creek South	Staf-ford	Ervin Ridge	Wood-hawk	Cow Creek	Antelope Creek	Bridge Coulee	Mussel-shell Breaks	Billy Creek	Seven Black-foot	Burnt Lodge	Terry Bad-lands
Cherry-stemmed Roads	Number Miles	0	0	2 2.5	1 1.5	5 11.0	0	0	0	0	0	0	1 0.2
Vehicle Ways	Number Miles	4 5.75	5 2.25	9 5.0	2 1.75	27 24.25	14 11.0	4 3.0	6 7.5	1 1.25	10 11.25	10 13.6	11 23.0
Fences	Number Miles	2 1.5	4 4.5	2 2.75	3 3.5	9 17.5	0	2 4.75	6 6.9	0	11 10.5	4 6.25	10 16.5
Powerlines	Number Miles	0	0	0	0	1 1.0	0		0	0	0	0	0
Reservoirs, Springs, Wells	Number Miles	3	1	10	11	24	2	4	2	5	16	4	29
Gas Wells (dry holes)	Number Miles	0	0	6	0	7	0	0	0	0	1	0	0
Landing Strips	Number Miles	0	0	1 .5	0	0	0	0	0	0	0	0	0
Diversion Dams	Number Miles					1 .25							

Source: BLM, 1981

TABLE 3.7: BOUNDARY OWNERSHIP IN THE WSAs

Boundary Ownership			Dog Creek South	Staf-ford	Ervin Ridge	Wood-hawk	Cow Creek	Antelope Creek	Bridge Coulee	Mussel-shell Breaks	Billy Creek	Seven Black-foot	Burnt Lodge	Terry Bad-lands
Private		Miles	8.2	10.0	4.3	2.6	34.6	4.1	7.8	17.5	10.2	44.5	27.0	35.0
		% of Boundary	49.7	49.5	14.4	12.4	46.0	15.8	42.6	65.3	56.7	74.2	60.0	70.0
State		Miles	4.3	8.5	13.6	5.5	4.1	3.9	3.3	2.3	1.8	4.0	5.5	7.0
	1)	% of Boundary	26.1	42.1	45.5	26.3	5.5	15.1	18.0	8.6	10.0	6.7	12.2	14.0
Federal		Miles	4.0	1.7	12.0	12.8	36.5	17.9	7.2	7.0	6.0	11.5	12.5	8.0
	2)	% of Boundary	24.2	8.4	40.1	61.2	48.5	69.1	39.3	26.1	33.3	19.2	27.8	16.0
Total		Miles	16.5	20.2	29.9	20.9	75.2	25.9	18.3	26.8	18.0	60.0	45.0	50.0

1) Included River Frontage
2) Included BLM and US Fish and Wildlife Service

Source: BLM, 1981

Mineral Leasing on Public Lands

The Federal Government owns the mineral rights on most of the land in the study areas with these exceptions; in the Terry Badlands WSA, 50% of the oil and gas rights on 240 acres are privately-owned and, in the Dog Creek South WSA, the government owns about ½ of the mineral rights on Land Utilization (LU) lands (about 780 acres). Federal minerals in the WSAs are available to the public under the Mineral Leasing Laws except in the Upper Missouri Wild and Scenic River Management Corridor.

Inside the river corridor, no new mineral leases will be issued, nor will expired or relinquished leases be reissued until regulations are prepared by the Secretary of the Interior. No leases will be issued along the river's bed, bank or within ¼ mile of the river's edge in the "Wild" Sections of the river, which affects parts of the Dog Creek South, Stafford, Ervin Ridge, Woodhawk and Cow Creek WSAs. About 12% of the Dog Creek South, 22% of the Stafford, 9% of the Ervin Ridge, 8% of the Woodhawk and .5% of the Cow Creek WSAs are thus unavailable for mineral exploration or development due to expired or unissued leases.

Table 3.8 shows the number and acreages (by WSA) of both pre-FLPMA, post-FLPMA, simultaneous and unleased oil and gas estates on public lands.

WSAs Inside the River Corridor

The *National Wild and Scenic River Act* (1968) (as amended in 1976) designated the Upper Missouri Wild and Scenic River as part of the National Wild and Scenic River System. The Missouri was the first river designated for multiple use management as such, grazing, mineral entry, wildlife management and motorized recreation were authorized to continue with the management option for further protection or enhancement of the environment left open.

The degree to which the Dog Creek South, Stafford, Ervin Ridge, Woodhawk, Cow Creek and Antelope Creek WSAs are included in the Upper Missouri Wild and Scenic River Management Corridor is shown in Table 3.9. The table also lists the management classification ("Scenic," "Recreational" or "Wild") of which the study areas are a part. The *Upper Missouri Wild and Scenic River Management Plan*, prepared in BLM's Lewistown District in October 1978, details the protective management for the river.

TABLE 3.8: OIL AND GAS LEASE STATUS BY WSA

Oil, Gas Leases	Dog Creek South	Stafford	Ervin Ridge	Woodhawk	Cow Creek	Antelope Creek	Bridge Coulee	Musselshell Breaks	Billy Creek	Seven Blackfoot	Burnt Lodge	Terry Badlands
PRE-FLPMA												
Number of Leases in WSA	10	11	7	2	20	8	0		2	7	2	17
Total Area of Leases (Acres)	10,346	14,069	12,705	3,105	38,163	9,528	0	3,948	4,720	14,638	4,908	30,271
Area of Leases in WSA	4,762	4,060	3,708	265	21,762	3,350	0	500	1,920	4,319	422	20,724
% of Leases in WSA	46.0%	28.9%	29.2%	8.5%	57.0%	35.0%	0%	12.7%	40.7%	29.5%	8.6%	68.5%
% of WSA in Pre-FLPMA Leases	92.9%	84.9%	36.3%	3.3%	63.9%	27.0%	0%	5.8%	55.9%	21.3%	3.0%	47.7%
KGS Area	No	No	Yes	No	No	No	No	No	No	No	No	No
Next to KGS Area	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
POST-FLPMA												
Number of Leases in WSA	1	0	4	4	11	7	6	8	2	7	7	20
Total Area of Leases (Acres)	323	0	14,243	11,072	29,937	11,278	12,396	13,788	1,319	19,579	23,276	31,796
Area of Leases in WSA	323	0	5,376	4,798	9,462	5,630	5,180	8,009	600	14,803	13,536	22,737
% of Leases in WSA	100%	0%	37.7%	43.3%	31.6%	50.0%	41.8%	58.1%	45.5%	75.6%	58.2%	71.5%
% of WSA in Post-FLPMA Leases	6.3%	0%	52.7%	59.2%	27.8%	45.6%	87.6%	92.8%	17.5%	73.2%	97.0%	52.3%
OIL & GAS SIM												
Acres of WSA in OG SIM	0	604	559	2,403	2,840	1,126	715	0	912	1,120	0	0
% of WSA in OG SIM	0%	12.6%	5.5%	29.7%	8.3%	9.1%	12.4%	0	26.6%	5.5%	0	0
UNLEASED												
Unleased Acreage	40	120	545	633	0	2,270	0	123	0	0	0	0
% of WSA Unleased	0.8%	2.5%	5.3%	7.8%	0%	18.3%	0%	1.4%	0%	0%	0%	0%
Area in Competitive Bid Leases	0	0	14	0	0	0	0	0	0	0	0	0
% of WSA in Competitive Bid	0%	0%	0.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: BLM, 1981

TABLE 3.9: WSAs IN THE UPPER MISSOURI WILD AND SCENIC RIVER CORRIDOR

Wild and Scenic River Designation	Dog Creek South	Staf-ford	Ervin Ridge	Wood-hawk	Cow Creek	Antelope Creek
Scenic						
Acres	0	425	0	1,540	0	4,373
% of WSA		8.9%		19.0%		35.4%
Recreation						
Acres	2,101	113	0	0	0	0
% of WSA	40.8%	2.4%				
Wild						
Acres	1,801	3,808	5,061	1,937	2,018	0
% of WSA	35.0%	79.3%	49.6%	23.9%	5.9%	
Total						
Acres	3,902	4,346	5,061	3,477	2,018	4,373
% of WSA	75.8%	90.5%	49.6%	42.9%	5.9%	35.4%

Source: BLM, 1981

Adjacent Land Use

Table 3.10 describes uses of lands within a mile radius of the WSA boundary. The degree of development and type of use of adjacent lands has the potential to affect solitude within a WSA. Mineral uses include oil and gas exploration activities and assessment work on mining claims. Recreational use of adjacent lands is mainly associated with boating on the Missouri and Yellowstone Rivers.

TABLE 3.10: USE OF LANDS ADJACENT TO THE WSAs

Adjacent Activities by %	Dog Creek South	Staf-ford	Ervin Ridge	Wood-hawk	Cow Creek	Antelope Creek	Bridge Coulee	Mussel-shell Breaks	Billy Creek	Seven Black-foot	Burnt Lodge	Terry Bad-lands
Farming	25	15	2	6	1	0	25	20	10	25	10	15
Grazing	63	80	86	88	97	94	75	79	90	75	90	80
Mineral	0	0	8	0	1	1	0	0	0	0	0	0
Recreation	12	5	4	6	1	5	0	1	0	0	0	5

Adjacent land use is based on seen activities up to a one mile radius from WSA boundary.

Source: BLM, 1981

SOCIAL AND ECONOMIC CONDITIONS

This section describes social and economic conditions in the six counties containing wilderness study areas (see Figure 1.1). Because these counties are scattered, they do not form a cohesive social or economic region. Blaine, Phillips and Valley counties use Havre, Malta and Glasgow as their major trade and service centers; Fergus County is served by Lewistown. Garfield County is served by Jordan and Miles City, and Prairie County by Terry and Miles City. Lewistown (7,104 people in 1980) and Glasgow (4,455 people in 1980) are the only towns in the six-county region with populations above 2,500.

The affected counties exhibited varying population characteristics from 1960-80. Blaine, Fergus and Prairie counties registered about a 4% increase in population; the other counties experienced decreases; up to 11%. High unemployment has been a problem in these counties, with each county experiencing a net loss of at least 18% of its population between 1960-1970. Valley County had the greatest decrease in population during the 60's (-33%), mostly due to the closure of the Glasgow Air Force Base. Although the rate of migration from the area dropped during the 70's, it is still a problem in some counties (Appendix 3.5).

In 1980 these six counties held 5% of Montana's population. Projections for 1990 and 2000 show the populations decreasing gradually in all counties except Fergus. This trend contrasts a projected statewide population increase of 19% by 2000.

There are 19 towns with populations of 5,000 or more within a 5-hour drive (250 miles) of the WSAs. These towns have a combined 1980 population of 347,000 people, with a projected increase to approximately 445,000 by 1990. The Powder River Valley of southeastern Montana and northeastern Wyoming may experience substantial population growth if coal development expands.

Social Conditions

Several sources of information were used in writing the "Local Attitudes and Perceptions" portion that follows, including sections of a 1980 survey by Abt Associates, public meetings and letters from and personal interviews with permittees.

Local Attitudes and Perceptions

Residents in the six counties affected exhibit attitudes and values typical of rural, ranch-oriented societies in the western United States. The rural character of the area is what residents value most about their lifestyle. Specifically, they appreciate the wide open spaces, naturalness, fresh air and solitude. The personal characteristics of other local people—friendliness, independence and industriousness—were frequently mentioned as positive aspects. The residents also valued the lifestyle offered by the local communities: knowing everyone else, the lack of urban problems, relaxed pace and personal freedom. They feel their area is a good place to raise children and, not surprisingly, every respondent wanted to maintain this lifestyle and the traditional land uses of the area.

Many residents felt the biggest threats to their lifestyle are BLM interference with local ranches, wilderness designation, high taxes, inheritance taxes and diverting the use of public lands to wildlife or recreation. They want the land controlled at the local level and resent interference from outside the area, whether from agencies or interest groups. Thus, any change in the status quo proposed by BLM would be questioned.

Local Attitudes Toward Wilderness Designation

This discussion is based on the information received from those who took the initiative to make their views known. It is assumed that the attitudes of other area residents would be similar. Nothing is indicated about these concerns becoming reality should the WSAs be designated wilderness. The importance of these views is reinforced by an Opinion Research Corporation survey completed in 1978. Over 55% of a national sample felt the decision about whether or not land should be set aside for wilderness should be made by the citizens of the states affected.

Local attitudes, particularly those of BLM permittees, are mostly negative toward wilderness designation; such a designation would be viewed as interference by the Federal Government. They feel wilderness designation would restrict the rancher's ability to manage his operation in such areas as constructing and maintaining water developments, controlling noxious weeds or fighting fires. Area residents question the vagueness of the wilderness management policy and feel cuts in AUMs or the closing of cherry-stemmed roads could occur as administrations change.

Many people believe wilderness studies waste taxpayers' money and that designation will result in unmanageable units. They feel long-term decisions are being made by people unfamiliar with the areas, and local residents will live with these decisions for the rest of their lives. Ranchers feel they are the best managers of the land; that multiple use should be continued; that the uses of these lands are unchangeable because of its rugged terrain and that the land has been well taken care of in the past. They feel the land will remain as it is, wilderness designation or not.

Residents feel these lands do not qualify for wilderness designation because of man's intrusions. They believe developments such as vehicle ways, cultivation, power poles, and state and private inholdings should disqualify these areas from wilderness consideration and that ranch activities next to WSAs would reduce wilderness quality.

Economic concerns, especially in the livestock industry, are major issues with the local population. They associate problems such as a loss of AUMs, forced changes in management procedures or reduced sale and loan values of borderline property with wilderness designation. Another concern is a perceived increase in income taxes and a loss of oil and gas revenue from wilderness designation. In general, it is felt Montana has enough wilderness and no more land should be removed from production.

The final attitude considered is about recreational uses of the WSAs. Local people voiced concern that wilderness designation is being advocated by the young, the healthy, those with ample time and those with enough money to rent horses. They feel vehicle restrictions would be unfair to hunters, older people, those with only time for a quick look and would result in additional hunting pressure on private land. Some stated the land is too hostile to attract many recreationists; others expressed concern about the influx of "hippie" types drawn by wilderness designation. The land is now open to visitors; local people occasionally take the time to show visitors around. Without wilderness designation, these activities will continue. However, some ranchers stated they would show their opposition to wilderness by closing access through their land.

Regional and National Attitudes Toward Wilderness Designation

National opinion surveys indicate the United States population is divided on the subject of wilderness. (Polls refer to wilderness areas in general rather than the particular WSAs in this document.) In 1977 a study conducted by Opinion Research Corporation (ORC) showed 7% of the population thought there was too much wilderness; 32% too little wilderness; and 46% thought the amount was about right. Those favoring more wilderness said it is needed for recreation, too much land is being lost to business or industry and wildlife needs more space. Those favoring no additional wilderness felt the land could be better used for buildings, farming and a growing population. In another survey by ORC (1978) Americans rated wilderness fifth (after clean air, clean water, oil and natural gas) as basic resources in short supply. In a 1979 survey conducted by Cambridge Reports, 39% of the U.S. population felt there was already enough wilderness, while 37% indicated the need for more wilderness. (The remaining 23% did not express a preference.) On another question in this survey, 45% said that more wilderness should be set aside while 30% said it should not.

The results of these surveys vary because of the changing political and economic climate in the United States and because the questions were phrased differently in each survey. It appears that about 1/3-1/2 of the population feels there are currently enough wilderness areas while a similar proportion feels there is a shortage. The attitudes of those living in Montana, Idaho and Wyoming are provided by three 1978 ORC surveys. In each state, a majority (52-58%) felt the current wilderness areas to be adequate. Smaller portions of the samples felt there was either too little (19-24%) or too much (14-21%) wilderness.

Repeatedly, wilderness surveys indicate there is confusion over what a wilderness area is. In the 1978 ORC poll only 15% of those responding were able to correctly define such wilderness management policies as minimum size requirements and the activities allowed in wilderness areas. This percentage was substantially higher in Montana, Idaho and Wyoming where respectively 31%, 29% and 25% of the respondents correctly defined wilderness areas (ORC 1978). This is to be expected, as these people are more likely to have lived near or visited a wilderness area.

Surveys indicate most of those responding are willing to modify wilderness management to allow energy development. Of those surveyed, 64% favored energy development in potential wilderness areas in 1978 (ORC 1978); by 1981 that figure had risen to 74% (ORC). However, among those who could correctly describe a wilderness area in 1978, 62% were opposed to energy development. In Montana, Idaho and Wyoming it was also found that over 60% of the respondents felt future energy needs could be met by alternative, renewable sources and by conservation (ORC 1978a, 1978b, 1978c).

Americans also felt economic growth and energy development must not come ahead of environmental concerns. Forty-two percent agreed with the statement "we must accept a slower rate of economic growth in order to protect our environment" (ORC 1981b). Twenty-five percent felt environmental standards must be relaxed to achieve economic growth. In another 1981 survey (Gallup), 55% of the respondents disagreed with the idea that the country should slow down the rate at which we are working to improve the environment, while 36% agreed. These findings have been substantiated by other surveys (Council of Environmental Quality, 1980). In 1978, 59% of the national population indicated the United States should either slow down or drastically limit the use of its national resources (ORC 1978). Residents of Montana, Idaho and Wyoming were less likely to agree with this statement (43 to 54%).

A study conducted in 1979 by S. Kellert of Yale University provides some insight into attitudes regarding wildlife populations and wilderness issues. Respondents were asked to agree or disagree with the following statement: "National resources must be developed even if the loss of wilderness results in much smaller wildlife populations." Nationally 44% agreed, while 51% disagreed. Residents of the Rocky Mountain Region were less likely to agree (39%), while livestock producers were much more likely to agree (75%). When asked if "energy projects should be modified to protect the bald eagle," 89% of the general respondents; 91% of the Rocky Mountain residents and 71% of the livestock producers agreed.

There is definite support for wilderness while there is also strong opposition to it. These findings are complicated because there is evidence most respondents do not understand wilderness management policies. There is support for modifying wilderness management to allow energy development but the ideas of environmental protection and slowing down resource use also have support. Information obtained in the 1981 Gallup Poll indicates most Americans feel the Federal Government's efforts in protecting parks/wilderness areas have improved conditions, with 13% saying "a great deal improved," 43% saying "somewhat improved" and 8% saying these policies have made conditions worse.

During the public comment period, letters from outside the local area generally supported wilderness designation. These letters usually referred to the wilderness areas as a group rather than to a specific WSA. The following reasons were cited in the letters of supporting these areas contain ecological communities not presently found in the wilderness system, through designation cultural, botanic and wildlife habitat can be saved from man's destructive habits and, since nearly 90% of public lands have been previously dropped from wilderness consideration, as much of the remaining 10% as possible should remain wild and free. In addition to these pro-wilderness letters, several energy companies wrote expressing concern over the potential loss of these areas to development.

Social Well-Being

Appendix 3.6 lists indicators of social well-being for the affected counties. These indicators show the positive and negative factors associated with living in remote rural areas. The counties containing WSAs share these problems: the number of people per physician is high; education levels are slightly lower; the proportion of housing without all or part of the plumbing for exclusive use is high; per capita income is low and farms and ranches are growing in size and decreasing in number. These comparisons were made on a statewide level.

Information from local residents (see "Local Attitudes and Perceptions") indicate they feel their area offers a high level of social well-being and the positive aspects of their lifestyle far outweigh the negative.

Ranch Related Economic Conditions

At the end of 1978 there were 3,020 ranches and farms in the six affected counties (Census of Agriculture, USDC, 1980). Currently 42 individual ranch operations have permits to graze in the WSAs. There is also one grazing association using the study areas. This association has 25 members, 3 of which currently use parts of the WSA. Four ranches and the grazing association have land in more than one WSA. Ranch operations with BLM permits comprise approximately 1.4% of the ranches in the affected counties. The proportion is highest in Garfield County with 6% of its ranches being affected.

The 45 ranch operations were placed into 12 categories according to numbers of livestock and the percentage of total AUM needs that are in the WSAs. The dependency of ranch operations on WSA forage is determined by a combination of several factors: the percentage of total required forage that WSA lands provide, the seasons the forage is available and the availability of substitutes for the forage, with the former being the primary indicator. Although there are a few operations raising sheep and yearlings, the predominant type of ranch is a cow/calf operation. Where sheep or yearlings are involved, the total number has been converted to equivalent cow units.

Table 3.11 shows size categories and dependencies of affected ranch operations. Thirty percent of the ranches fall into the 251-500 herd size category, with 22.5% being larger and 47.5% being smaller. Sixty-seven percent of the operations are less than 16% dependent on WSA land, with average dependencies in the 0-6% category.

TABLE 3.11: SIZE CATEGORIES AND DEPENDENCIES OF AFFECTED OPERATIONS[1]

	0-6% Dependency			7-15% Dependency			16-41% Dependency			
Size Category (in cow units)	**# in Category**	**Avg. # AUMs in WSA**	**Avg. Dependency within Category**	**# in Category**	**Avg. # AUMs in WSA**	**Avg. Dependency within Category**	**# in Category**	**Avg. # AUMs in WSA**	**Avg. Dependency within Category**	**Total**
1-100	1	17	3.2%	4	75	11.9%	3	122	16.1%	8
101-250	4	53	2.9%	4	209	11.7%	3	345	27.0%	11
251-500	5	65	2.3%	2	321	11.5%	5	1,002	29.2%	12
more than 500	7	396	3.1%	0	—	—	2	2,333	30.9%	9
TOTAL	17			10			13			40

[1] Grazing associations and those currently with no livestock are not included here.

Permittees with land in more than 1 WSA are counted only once and their WSA land is totaled.

Sales that are in progress are assumed to be completed.

Dependencies are based on estimated herd size, 7 1/2 month grazing season, 1 bull per 20 cows, 20% replacement rate.

Source: BLM, 1981

Table 3.12 shows the ranch size/dependency distribution for the operations within each WSA. The dependency of these ranches on the study area ranges from 4% to 28%. Half of the ranches with cattle fall into the 0-100 herd size category. The grazing association has approximately 35% of its BLM permits located in the WSAs.

The total number of families dependent upon net ranch income for their sole livelihood is difficult to determine. Almost all the ranches are family owned, owner-operated having been in the family for several generations. About half have more than one family associated with the ranch. Some operations derive most of their income from farming, with substantial cash crops (primarily wheat) being raised on about half of the operations. About .25 of the ranchers have an additional source of income outside the ranch or farm.

Although BLM does not recognize the right of the permittee to treat grazing permits as real property, in practice the permit does have worth for borrowing money and adding value to the property at the time of sale. These values could be affected by a change in land status, such as wilderness designation.

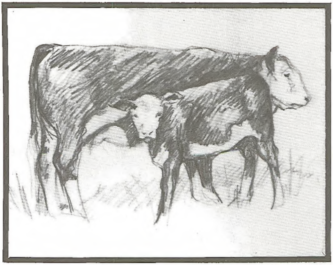


TABLE 3.12: RANCH SIZE CATEGORIES AND DEPENDENCIES BY WSA[1]

	1-100 cows 0-6% Dep.	1-100 cows 7-15% Dep.	1-100 cows 16-41% Dep.	101-250 cows 0-6% Dep.	101-250 cows 7-15% Dep.	101-250 cows 16-41% Dep.	251-500 cows 0-6% Dep.	251-500 cows 7-15% Dep.	251-500 cows 16-41% Dep.	More than 500 cows 0-6% Dep.	More than 500 cows 7-15% Dep.	More than 500 cows 16-41% Dep.	0 cows	Grazing Association	TOTAL
Dog Creek South				2						1					3
Stafford			1				1								2
Ervin Ridge					2										2
Woodhawk					1						1				2
Cow Creek		1	1	1		1	1			1		1		1	8
Antelope Creek					1						1			1	3
Bridge Coulee				1					1						2
Musselshell Breaks	1			1		1	1		1						5
Billy Creek							2	1							3
Seven Blackfoot		3	1	1		1		1	1				2		10
Burnt Lodge								1	1	1					3
Terry Badlands									1	3		1			5
TOTAL	1	4	3	6	4	3	5	3	5	6	2	2	2	2	48

[1] A permittee or grazing association is listed under each WSA in which land is leased. Specific dependencies are for the individual WSAs.

Source: BLM, 1981

County Employment and Earnings

Figures for 1974 and 1979 show agriculture and government to be the main sources of employment in the affected counties (Appendix 3.7). Total employment decreased in all but Blaine and Fergus counties during this period while proprietary and wage and salary agricultural employment showed substantial decreases in every county. These agricultural losses reflect similar statewide and national trends due to decreases in the number of farms and ranches and increasing mechanization (Abt 1980a). During this same time period, total state employment increased by 12.5%.

Appendix 3.8 shows county earnings by source. In 1974 agriculture and government were the major sources of earnings, with retail trade and services contributing the next largest portions. Agriculture earnings decreased substantially by 1979 and in two counties registered a loss. Total earnings between 1974 and 1979 increased in three counties: Phillips, Fergus and Petroleum and decreased in all others. The large decreases in agriculture offset the gains made in most other sectors in each affected county. These figures are compared to a statewide increase of 53.5% during the same period.

Oil and Gas Related Employment and Taxation in the Counties With WSAs

Since there are no producing oil or natural gas wells in any WSAs, this discussion is based on neighboring wells. It is assumed that if development were to occur, it would be similar to that in present fields and generate comparable employment and tax revenue.

Only the property and severance taxes that are returned directly to the counties are examined. Production from the Leroy Natural Gas Field represents less than 2% of the state's total (Appendix 3.9), however, it contributed almost 4% of Blaine County's property taxes from 1979-1981. The Cat Creek Oil Field produces less than .3% of the state's total and contributed 2.5-5% of the property taxes for Petroleum County from 1979-1981.

The severence tax return occurs only if county production increases from the previous year. Neither Blaine (for natural gas) nor Garfield County (for oil) has received a return from this source in the two years it has been available.

Due to conflicting figures from county business patterns, industry and the Bureau of Economic Analysis, it is difficult to estimate petroleum-related employment figures at the county level. Producing fields such as the Leroy or Cat Creek offer little or no local employment. Although exploration and development can provide substantial numbers of jobs, many of these jobs are filled by transient workers rather than the local labor force.

WILDERNESS

Wilderness Diversity (Ecotype/Landform)

All 12 wilderness study areas are in the Great Plains Shortgrass Prairie Ecoregion (3110) (subgroup grama/needlegrass/wheatgrass—057) according to the Baily-Kuchler System (see Glossary). UL Bend, a 20,893-acre area managed by the U.S. Fish and Wildlife Service (USFWS) is presently the only representative of this ecotype subgroup in the National Wilderness Preservation System (NWPS). Fifteen WSAs in the Charles M. Russell National Wildlife Refuge, totaling 161,480 acres, are also in the 057 subgroup. These study areas have been endorsed by the President and are awaiting Congressional action. One BLM WSA in the Butte District is also included in this ecotype/landform type. Appendix 3.10 lists all state and national representations of the 057 ecoregion subgroup.

As part of the Roadless Area Review Evaluation II, the U.S. Forest Service (USFS) examined all wilderness and wilderness study areas for ecotype representation. They then assigned regional ecotype targets as a means of balancing ecotype diversity in the NWPS. The highest target would have at least six wilderness areas of a specific ecotype.

None of the USFS units were in subgroup 057, but they did indicate one USFWS wilderness (UL Bend) and one USFWS wilderness study area in this ecotype. Actually, there are 14 additional USFWS WSAs in ecotype 057 not indicated by the Forest Service.

If the 15 USFWS wilderness study areas were designated wilderness, the regional target for the 057 ecotype would more than be met. The addition of the BLM WSAs in the NWPS would not be necessary solely to balance ecotype diversity.

Wilderness Opportunities: The Proximity to Population Centers

Within 5 hours driving time (250 miles) of the WSAs, are three urban areas with enough people to be called population centers. Two of these cities, Billings and Great Falls, are "standard metropolitan statistical areas" (SMSAs), or industrial and population concentrations defined by the U.S. Bureau of the Census. Billings has a population of 66,798 and a county-wide population of 108,035 people according to the 1980 Census. Great Falls has 56,725 people, with a metropolitan area population of 80,696. Bismarck/Mandan, North Dakota (which is not a SMSA) has 59,998 inhabitants, and a metropolitan area population of 79,988.

Billings and Great Falls are within 5 driving hours of abundant and diverse wilderness areas. There are 11 areas containing a total of 4,559,142 acres within 250 miles of Billings and 18 areas totaling 8,673,567 acres within 250 miles of Great Falls. These two cities are also near a number of administratively-endorsed wilderness study areas and several other areas not administratively-endorsed but still undergoing study. Billings is within 250 miles of 54 administratively-endorsed wilderness study areas totaling about 3,446,800 acres and 107 other WSAs totaling 2,457,496 acres. There are 68 administratively-endorsed study areas of 4,617,100 acres and 70 other WSAs totaling 1,720,578 acres within 250 miles of Great Falls.

The Bismarck/Mandan metropolitan area has access to far fewer wilderness areas. Bismarck is within 250 miles of 7 designated wilderness areas of approximately 121,955 acres, 2 administratively-endorsed wilderness study areas totaling 24,400 acres and 5 other wilderness study areas of 72,508 acres. Appendix 3.11 shows the total acreage by state of designated, Presidentially endorsed and WSAs within a day's driving time of Billings, Great Falls and Bismarck/Mandan.

Montana Statewide Wilderness Summary

Appendix 3.12 describes the status of all designated wilderness and wilderness study areas, by agency, in the State of Montana.

Regional Wilderness Analysis

Montana, Wyoming, Idaho and North Dakota are combined into a region for purposes of this analysis. Visitors from this region have good access to central Montana and are within reasonable driving distance to visit any areas included in this study. Portions of all of these states are within a 250 mile radius of one or more of these WSAs. Residents of the states have similar economic and social backgrounds and presumably similar demands for wilderness resources.

In the region there are 29 wilderness areas of 9,274,679 acres, 119 units totaling about 5,918,896 acres of administratively-endorsed wilderness areas and 199 wilderness study areas (4,536,243 acres). Overall, the region has 19,729,818 acres in 347 areas either designated wilderness or with the potential of designation. Table 3.13 shows the distribution of designated and potential wilderness areas by state.

Wilderness Quality

Wilderness quality is one of the planning criteria to be considered in the impact analysis before selection of the preferred alternative for each WSA (see Chapter 1). Wilderness quality is evaluated by considering four items: apparent naturalness, the opportunities for solitude, opportunities for primitive recreation and the presence of special features such as outstanding scenery, ecological, geological, educational or historic values. Evaluations of wilderness quality by WSA follow. The analysis is based on the format outlined in *BLM's Draft Wilderness Study Policy* (pp. 83786-83788).

TABLE 3.13: WILDERNESS REGIONAL ANALYSIS SUMMARY

	Approximate Acreage (Number of Areas)				
State	**BLM**	**USFS**	**NPS**	**USFWS**	**State Total**
Statutory Wilderness (State and Agency)					
Montana	N/A	3,107,342 (11)	N/A	64,997 (3)	3,172,339 (14)
Idaho	N/A	3,825,069 (5)	42,243 (1)	N/A	3,868,312 (6)
Wyoming	N/A	2,194,303 (6)	N/A	N/A	2,194,303 (6)
North Dakota	N/A	N/A	29,920 (1)	9,805 (2)	39,725 (3)
TOTAL					9,274,679 (29)
Administratively Endorsed (State and Agency)					
Montana	N/A	681,812 (34)	1,084,660 (2)	161,480(15)	1,927,952 (51)
Idaho	N/A	1,077,200 (43)	69,800 (1)	N/A	1,147,000 (44)
Wyoming	N/A	987,400 (21)	1,848,744 (2)	N/A	2,836,144 (23)
North Dakota	N/A	7,800 (1)	N/A	N/A	7,800 (1)
TOTAL					5,918,896 (119)
Wilderness Further Study Areas (State and Agency)					
Montana	427,767 (43)	1,207,769 (25)	7,645 (1)	N/A	1,643,181 (69)
Idaho	1,246,901 (61)	673,100 (13)	N/A	N/A	1,920,001 (74)
Wyoming	578,161 (48)	414,900 (8)	N/A		973,061 (56)
North Dakota	N/A	N/A	N/A	N/A	N/A
TOTAL					4,536,243 (199)

Source: BLM, 1981

DOG CREEK SOUTH

The Dog Creek South Wilderness Study Area consists of about 5,150 acres of public lands on the south side of the Missouri River in Fergus County. Three thousand nine hundred and two acres are in the Upper Missouri Wild and Scenic Corridor, 2,101 acres being in the "Recreational" Section while 1,801 acres are in the "Wild" portion. The WSA boundary on the north is the river's edge, on the south a maintained road and elsewhere on property ownership lines not easily discernable on the ground.

Naturalness

Table 3.14 lists the manmade features in this WSA. They are mostly scattered and well screened but a vehicle way is an exception. Traversing the northern end of the unit for about 4.75 miles, this way is easily visible from near the river and from the ridgetops. Although the way is revegetating in places through lack of use, it is a major infringement on the naturalness of the WSA's northern end. Mechanical rehabilitation would probably create more damage than if the way were allowed to revegetate over time.

The other manmade features are mostly associated with livestock grazing. No attempt would be made to rehabilitate grazing facilities in any WSA should they be designated wilderness, unless found to be unnecessary for grazing management.

Because of the location of most manmade features, boundary modifications would not significantly increase the apparent naturalness of this study area.

Solitude

The WSA is fairly compact, about 5 miles long and 1-3 miles wide. Drainages are extremely steep and are separated by narrow, barren ridges. Dog Creek South contains very little screening vegetation but topographic screening is abundant due to the rugged river breaks topography. Since steep slopes run from the overlooking ridges down to the river, wilderness users would probably be channeled to a few areas along the Missouri; to isolated pockets between minor drainages or along flat ridgetops.

TABLE 3.14: MANMADE FEATURES IN THE DOG CREEK SOUTH WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 22 N., R. 17 E. Sec. 5	Off Dog Creek	1 Acre	On maintained road which forms part of south boundary.
2	T. 22 N., R. 17 E. Sec. 4	South edge of unit	1 Acre	Located in a grassy swale - visible from rises surrounding the reservoir.
3	T. 23 N., R. 17 E. Sec. 33	Center of unit	1 Acre	Well screened reservoir hidden in a side drainage.
Vehicle Ways				
1	T. 23 N., R. 17 E. Sec. 27	End of vehicle trail heading north of Whiskey Ridge	.25 Mile	Dirt two track to edge of ridge.
2	T. 23 N., R. 17 E. Sec. 27	Connects with same road as above vehicle trail	.25 Mile	Dirt two track.
3	T. 23 N., R. 17 E. Secs. 27, 28, 29, & 30	Follows river side irregularly	4.75 Miles	Recently graded trail following the general alignment of an earlier trail.
4	T. 23 N., R. 17 E. Secs. 28 & 29	Leads to south from above vehicle trail	.5 Mile	Almost nonexistent two track.
Fences				
1	T. 23 N., R. 17 E. Sec. 27	Upstream of Iron City Islands heading inland from river	.5 Mile	Follows up the side of a drainage to a deep side coulee. Green steel and wood posts.
2	T. 22 N., R. 17 E. Secs. 4 & 5	South edge along south boundary road	1 Mile	Drift fence; wood posts; mostly located along south boundary road.

Source: BLM, 1981

The drainages to the north and west drop directly towards the PN Ranch at the mouth of Dog Creek and towards other ranches north of the river. Developments within a few hundred yards of the WSA's edge adversely influence solitude because of the dust, noise, reflections of moving vehicles and people. Extensive farming operations are also readily visible from the WSA, being from 400 yards to ½ mile from much of the unit. Throughout the spring, summer and fall, farm vehicles are regularly used on adjacent fields.

Motorized traffic down the river and the present construction of the PN Bridge across the Missouri further infringe on solitude, adversely affecting approximately 2,000 acres on the north and west sides of the WSA. True solitude is available only in the center and eastern portions of the unit.

All of the WSAs in the Missouri River Breaks are in the Air Force's Hays Military Operations Area, a National Guard tactical jet fighter training zone. Eight aircraft are scheduled to fly through the area every day at 4,000 feet, so periodic disruptions of solitude throughout the WSA should be expected.

Overall, solitude in this unit is seriously affected by continuing agricultural operations adjacent to the northern and western parts of Dog Creek South.

Primitive Recreational Opportunities

The location on the Missouri River contributes to the primitive recreation opportunities in this WSA; fishing from the shore, waterfowl hunting and camping are all possible. Other possible recreational uses include hiking, horseback riding, nature study and photography. Present uses are limited to sightseeing (by vehicle), hunting for mule deer and camping along the river. The nearness to construction and farm-ranch operations in this general area makes the river campsites less desirable than other locations along the Missouri. Some camping sites can be found on the long ridges inside the unit, although the lack of trees and water make camping there less attractive. Like the other WSAs near the Missouri, Dog Creek South provides good hunting. Possible detriments to hunting are restricted access through private lands, the difficulty of retrieving game and fluctuating game populations.

The area is remote from population centers and inaccessible in wet or snowy weather. The user season would be from May-October, in dry conditions only. Physical hazards to visitors in the area include rattlesnakes, steep terrain, lack of drinking water and the difficulty of travel in wet weather. The lack of forest vegetation, outside distractions, the channeling of visitors into the deep drainages, narrow long ridge lines, and the small size of this WSA all mean the Dog Creek South WSA does not offer outstanding opportunities for wilderness recreation.

Supplemental Features

The study area has striking vertical, heavily-eroded scenery, a notable attribute. Most slopes are open clay, with prairie vegetation on the ridgetops. There are very few trees.

The WSA contains a remnant from the homesteading era and is next to the PN Ranch, important to the history of the area.

STAFFORD WSA

The 4,800-acre Stafford WSA is just north of the Missouri River between the PN and Stafford Ferries in Chouteau and Blaine Counties. Of this unit, 4,346 acres are in the Upper Missouri Wild and Scenic River Management Corridor: 425 acres in the "Scenic" Section, 113 acres in the "Recreational" and 3,808 acres in the "Wild." Parts of the study area are bounded by the Birch Creek Ridge Road, the Boiler Bottom vehicle way, Montana State land, recently acquired public lands, the Missouri River and private lands.

Naturalness

Stafford's rugged terrain has limited human imprints, which helps retain the WSA's natural appearance. Developments are few and scattered, lying primarily on the unit's periphery (see Table 3.15). The manmade features are of low significance being substantially unnoticeable. Because of their location, boundary modifications would not significantly increase the apparent naturalness of this WSA.

The few developments inside the unit are mostly associated with livestock grazing. As with all WSAs, facilities would not be rehabilitated unless they were found to be unnecessary for grazing management. Vehicle ways that follow ridges and have their primary use for seasonal hunting or sightseeing would revegetate naturally if not used.

Solitude

The Stafford WSA is long and narrow, stretching 8 miles in length and ½-1½ miles in width. It is found in a rugged portion of the Missouri Breaks, with steep and highly dissected coulees that are often sparsely vegetated. Where slopes and soils permit, vegetation is composed of prairie grasses, sagebrush and juniper. Patches of cottonwoods parallel the river and juniper and pine grow in a few isolated groves.

TABLE 3.15: MANMADE FEATURES IN THE STAFFORD WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoir				
1	T. 23 N., R. 18 E. Sec. 29	East edge	1 Acre	Off a vehicle way and within a narrow drainage.
Vehicle Ways				
1	T. 23 N., R. 17 E. Sec. 20	West edge	.50 Mile	An alternate access to private farmland when main access is washed out. Shows signs of construction but minimal use.
2	T. 23 N., R. 17 E. Sec. 21	Northwest side	.50 Mile	Unconstructed ridge trail that leads from Birch Creek Road.
3	T. 23 N., R. 17 E. Sec. 21	Northwest edge	.25 Mile	Unconstructed two wheel track that follows ridge. Shows minimal use.
4	T. 23 N., R. 17 E. Sec. 22	North edge	.25 Mile	Unconstructed two wheel track that leads to fence. Shows very little use.
5	T. 23 N., R. 18 E. Sec. 29	Northeast edge	.75 Mile	Unconstructed two wheel track that leads to a reservoir. Shows very little use.
Fences				
1	T. 23 N., R. 17 E. Sec. 20	West edge	.5 Mile	Boundary fence that has a primitive appearance.
2	T. 23 N., R. 17 E. Sec. 21	Southwest edge	.5 Mile	Boundary fence that has a primitive appearance.
3	T. 23 N., R. 17 E. Secs. 15, 22, & 23	North edge	1.25 Miles	Boundary fence that follows a ridge line.
4	T. 23 N., R. 17 E. Secs. 28 & 29	Northeast edge	2.25 Miles	Lies along the overlooking ridges and unit's boundary.

Source: BLM, 1981

Since the unit has very few tall plants, there is very little screening from vegetation but topographic screening is abundant. Steep slopes running down from the ridges overlooking the river would probably channel wilderness users into a few areas along the Missouri; to isolated pockets between minor drainages or along flat ridgetops. This decreases the opportunities for solitude in this unit.

The opportunity for solitude is also affected by the adjacent homes, vehicle use along surrounding roads, boat travel on the river and by four farm-ranch operations next to the WSA. Three ranches lie along the northern border (T. 23 N., R. 17 E., Sections 13 and 19) while the other is on the opposite side of the Missouri at the southeast end of the unit (T. 23 N., R. 18 E., Section 18). It is currently vacant. Fields are farmed up to the WSA boundary in the northeast end and other farming operations are within 3/4 of a mile of the study area. Farm equipment is occasionally visible and audible during the main recreational season of May-October. The operation in Section 13 has an aircraft runway and the operators regularly fly over the WSA.

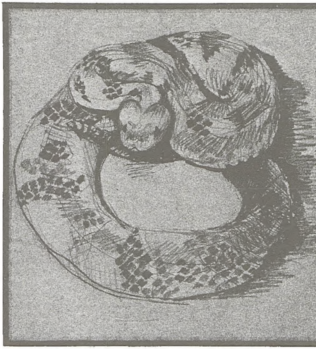
The Stafford WSA is also part of a National Guard tactical jet fighter training zone, with eight aircraft every day scheduled to fly over at 4,000 feet. Periodic disruptions of solitude should be expected throughout the study area.

The county road to the Stafford Ferry, immediately across the river from the east end of the Stafford WSA, is well used during the summer. A hayfield and homesite are also just across from the east end of Stafford, with the sight and sound of the irrigation system of the former present throughout the summer growing season. Solitude in the west end of Stafford is reduced by the nearby farming operations and the construction of the PN Bridge. The use of the bridge and the highway to be built to service it will be a distraction in the future. More traffic will also travel on the Birch Creek Road which forms part of the north boundary of the WSA. These offsite impacts are well within both the sight and sound zone of 25% of the Stafford WSA.

Primitive Recreational Opportunities

Typical recreational opportunities in the unit include horseback riding, hunting, hiking, sightseeing, photography and fishing from the riverbank. Hunting is presently the biggest use, usually from vehicles traveling along the ridgetops of the north boundary. Travelers along the Upper Missouri Wild and Scenic River can find limited campsites along the shorelines of the study area, and can hike the coulees or enjoy the area's scenery.

Although there are some opportunities for primitive recreation, use is limited in various ways. The steep terrain channels use along the river or the finger ridges, while the lack of screening vegetation limits campsites to the few scattered groves of trees along the river. Rattlesnakes, the lack of water and the difficulty of travel during wet weather present hazards to the wilderness user.



Supplemental Values

This WSA, like almost all of the Missouri River Breaks, contains features of scenic and historical value. Steep coulees and clay cliffs offer stark contrast to the Missouri River. Evidences of the use of the area by Indians and homesteaders can be found in the study area and an old wagon road forms its eastern border.

ERVIN RIDGE WSA

This 10,200-acre unit is just north of the Missouri River, 10 miles east of the Stafford (McClellan) Ferry crossing. Five thousand and sixty-one acres are in the "Wild" Section of the Upper Missouri Wild and Scenic River Management Corridor.

The southern boundary is the Missouri River while the northern border is formed by the Lone Tree—Ervin Ridge Road. The rest of the unit is bounded by the Barnard Ridge Road, public lands, private land and Montana State land.

Naturalness

The WSA's rugged terrain has confined most of the developments to ridgetops or near access routes, affecting areas lying near the border or along the cherry-stemmed roads. The eastern half of the WSA, coulee bottoms, areas below the ridge lines and along the river appear natural.

The few manmade features inside the unit are primarily associated with livestock grazing (see Table 3.16). No attempt would be made to rehabilitate these facilities, if the unit were designated wilderness, unless they were found unnecessary for grazing management. Vehicle ways following ridges, with their primary use for seasonal hunting or sightseeing, would revegetate naturally through lack of use.

TABLE 3.16: MANMADE FEATURES IN THE ERVIN RIDGE WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 24 N., R. 19 E. Sec. 27	West edge	1 Acre	Next to a maintained road.
2	T. 24 N., R. 19 E. Sec. 23	Northwest edge	1 Acre	Small reservoir off a vehicle way.
3	T. 24 N., R. 19 E. Sec. 25	Near Lone Tree Ridge Road	1 Acre	Small reservoir that lies off a vehicle way.
4	T. 24 N., R. 19 E. Sec. 26	Near the end of Barnard Ridge	1 Acre	Small reservoir that lies off a ridge road.
5	T. 24 N., R. 20 E. Sec. 19	Adjacent to Lone Tree Ridge Road	1 Acre	Small reservoir that lies adjacent to a ridge road.
6	T. 24 N., R. 20 E. Sec. 33	Along the south edge of Ervin Ridge	1 Acre	Well screened reservoir in drainage.
7	T. 24 N., R. 20 E. Sec. 33	Near Ervin Ridge	1 Acre	Located near top of ridge and visible near surrounding rise.
8	T. 24 N., R. 20 E. Sec. 34	South of Ervin Ridge	1 Acre	It has a dike leading into it and lies near the top of a ridge.
9	T. 24 N., R. 20 E. Sec. 27	Along Ervin Ridge Road	1 Acre	A well screened reservoir lying near the top of a drainage.
10	T. 24 N., R. 19 E. Sec. 25	Along Lone Tree Ridge Road	1 Acre	Well screened reservoir near top of ridge.
Vehicle Ways				
1	T. 24 N., R. 19 E. Secs. 26 & 27	Leads off cherry-stemmed road on west side	.75 Mile	Constructed vehicle way that follows side and top of ridge to a dry gas well and fence line. Apparently constructed for access into an old fire.
2	T. 24 N., R. 19 E. Sec. 22	Leads north from west cherry-stemmed road	.25 Mile	Constructed for access to a gas well that turned dry.
3	T. 24 N., R. 19 E. Sec. 22	Northwest edge off Lone Tree Ridge Road	.5 Mile	Two wheel dirt track that leads to a reservoir.
4	T. 24 N., R. 19 E. Sec. 24	North edge off Lone Tree Ridge Road	.5 Mile	Two wheel dirt track that leads to a reservoir.
5	T. 24 N., R. 19 E. Secs. 24 & 25	North edge off Lone Tree Ridge Road	.5 Mile	Constructed access to a dry gas hole. Shows little use.
6	T. 24 N., R. 20 E. Sec. 30	North edge off Lone Tree Ridge Road	.25 Mile	Almost nonexistent two wheel track.
7	T. 24 N., R. 20 E. Sec. 32	North edge off Lone Tree Ridge Road	.25 Mile	Constructed access to a dry gas hole. Shows little use.
8	T. 24 N., R. 20 E. Secs. 32 & 33	North edge off cherry-stemmed road	1 Mile	Two wheel track that leads to reservoir.
9	T. 24 N., R. 20 E. Sec. 33	North edge off cherry-stemmed road	1 Mile	Two wheel track that leads to reservoir.
Airplane Landing Strip				
1	T. 24 N., R. 20 E. Sec. 33	South of the Ervin Ridge	.5 Mile	Area that was flattened and cleared of sagebrush. Has little, if any, use.
Fences				
1	T. 24 N., R. 19 E. Secs. 22, 23, 25, & 26	In Williamson Coulee	2.5 Miles	Three four-strand metal post barbed wire.
2	T. 24 N., R. 20 E. Sec. 30	North edge off Lone Tree Ridge Road	.25 Mile	Three four-strand wooden post barbed wire.
Dry Gas Wells				
1	T. 24 N., R. 19 E. Sec. 22	West edge	1 Acre	Very well screened dry hole.
2	T. 24 N., R. 19 E. Sec. 27	On cherry-stemmed road near west edge	1 Acre	Dry hole on end of ridge.
3	T. 24 N., R. 19 E. Sec. 25	Off Lone Tree Ridge Road	1 Acre	Dry hole on end of ridge.
4	T. 24 N., R. 20 E. Sec. 32	Off Ervin Ridge Road	1 Acre	Dry hole that is very well screened.
5	T. 24 N., R. 20 E. Sec. 34	South of Ervin Ridge and at end of cherry-stemmed road	5 Acres	Almost visually rehabilitated.
6	T. 24 N., R. 20 E. Sec. 26	South of Williamson Coulee	5 Acres	Lies on side of ridge.
Cherry-stemmed Roads				
1	T. 24 N., R. 19 E. Secs. 22 & 27	Leads from west edge	.75 Mile	Constructed and often used dirt road that leads to reservoir.
2	T. 24 N., R. 20 E. Secs. 33 & 34	Leads from north edge	1.75 Miles	Constructed and often used dirt road that leads to dry gas well.

Source: BLM, 1981

Because of the location of most developments, boundary modification would not significantly increase this WSA's apparent naturalness.

Solitude

About 10 miles long and ¼-2¾ miles wide, this unit is irregularly shaped. The rugged topography of steep and highly eroded ridge lines tapers to narrow edges before dropping to the river. The terrain provides solitude but the steep slopes also channel visitors along the Missouri and to the ridgetops. Where slopes and soils allow, the vegetation cover is predominantly short prairie grasses and sagebrush, while 20% of the area has groves of ponderosa and lodgepole pine, juniper and Douglas fir. An occasional cottonwood is found along the river. Vegetation growing along drainages and on some ridgetops provides some screening, primarily in the eastern half of the unit.

Solitude in certain parts of this unit is affected by the configuration of the Ervin Ridge Wilderness Study Area, outside impacts and by the two cherry-stemmed roads. Inside the unit, the wilderness user is never more than a mile from the boundary. Farming, vehicle traffic on the boundary and cherry-stemmed roads and activities around three homesites near the west side are distracting. On the Barnard and Pendell Ridges, intensive wheat farming borders the WSA, while farming operations across the river can be seen from the unit's ridgetops. Motorized traffic on the Missouri River, while slight, is a further infringement on solitude. The best opportunity for solitude is in the southeastern part of the WSA.

This unit is part of a National Guard tactical jet fighter training zone, where up to eight aircraft daily are scheduled to fly at 4,000 feet. Periodic disruptions of solitude throughout the unit should be expected.

Primitive Recreational Opportunities

Hunting and recreation from the Upper Missouri Wild and Scenic River are presently the two most common forms of recreational use in the study area. Hunting is usually from vehicles traveling along the ridgetops or by boat. Inside the WSA, hunting is challenging because retrieving game is complicated by the steep slopes. Other forms of primitive recreation that could occur in the unit include horseback riding, hiking, sightseeing, photography and fishing from the riverbank.

Access to the area is limited. The main access points are through the Ervin Ridge and Barnard Ridge Roads and by boat from the Missouri River. Wet weather and snow often make these dirt roads impassable and can quickly seal off the area, limiting access to May-October during dry weather.

Although there are opportunities for recreation, the WSA's steep terrain channels use along the river, along coulee bottoms or on finger ridges. The lack of vegetation and drinking water, the difficulty of travel during wet weather and rattlesnakes increase the hazards of recreation in the unit.

Supplemental Values

The WSA is very scenic and rugged, combining steep slopes of exposed clay with narrow finger ridges. Trees are few. The area is historically significant with prehistoric artifacts being found and with a few remnants of the homestead era still extant.

WOODHAWK WSA

The Woodhawk WSA of 8,100 acres, is next to the Missouri River in Fergus County. Parts of the unit are in the Upper Missouri Wild and Scenic River Management Corridor, 1,937 acres being in the "Wild" Section and 1,540 acres in the "Scenic." The eastern and northern boundaries of the study area are formed by the river and the southern border by a county road. The western boundary is formed partially by an old wagon road with the rest drawn on legal subdivisions.

Naturalness

Although there are several developments inside the study area, most are scattered and well screened. The cluster of reservoirs in T. 23 N., R. 21 E., Sections 25, 26 and 27 are in sight of the cherry-stemmed road which bisects the unit (see Table 3.17). In this part of the WSA, naturalness is slightly affected.

The features inside the unit are mostly associated with livestock grazing. If designated wilderness, no attempt would be made to rehabilitate facilities in Woodhawk unless they are found to be unnecessary for grazing management. Boundary modifications would not significantly increase this WSA's apparent naturalness because of the location of manmade features.

Solitude

Woodhawk is a compact WSA 4 miles long by 2½-4 miles wide with the distance from the center to the perimeter about 1½-2 miles.

Approximately 60% of the WSA has good to excellent screening vegetation, but bare, south-facing slopes lack screening. The middle of the study area and the southwestern edge are devoid of forest vegetation because of fire. In portions of the unit, the topography also provides good screening, creating opportunities for solitude.

The cherry-stemmed road in the middle of Woodhawk is on a high, open ridge, heavily used during hunting season. This road is the only access to the central portion of the unit and would tend to congregate both motorized and non-motorized users, detracting from the wilderness quality by channeling visitors to the otherwise most isolated and scenic part of this WSA. Vehicle traffic is not the only distraction. Farming operations to the south and north are visible and often audible, affecting the overall opportunity for solitude from the high ridges and hilltops. Lights from mining operations in the Little Rockies are also visible at night, but from a long distance. This WSA, like all the units in the Missouri Breaks, is in a National Guard fighter training zone. Eight aircraft are scheduled to fly daily over the WSA at 4,000 feet; periodic disruptions of solitude throughout the unit should be expected.

TABLE 3.17: MANMADE FEATURES IN THE WOODHAWK WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 23 N., R. 21 E. Sec. 27	Southwest corner of the unit	1 Acre	Small retention reservoir in steep drainage.
2	T. 23 N., R. 21 E. Sec. 27	Southwest corner of unit	1 Acre	Small retention reservoir in steep drainage.
3	T. 23 N., R. 21 E. Sec. 26	Near south border of unit	1 Acre	Small retention reservoir in steep drainage.
4	T. 23 N., R. 21 E. Sec. 25	Southeast corner of unit	1 Acre	Pit reservoir along steep drainage.
5	T. 23 N., R. 21 E. Sec. 26	Near south border of unit	1 Acre	Small retention reservoir in steep drainage.
6	T. 23 N., R. 21 E. Sec. 28	Southeast corner of unit	1 Acre	Small retention reservoir in steep drainage.
7	T. 23 N., R. 21 E. Sec. 25	Near south border of unit	1 Acre	Small retention reservoir in steep drainage.
8	T. 23 N., R. 21 E. Sec. 22	Near west border of unit	1 Acre	Small retention reservoir in steep drainage.
9	T. 23 N., R. 21 E. Sec. 23	Near center of unit and west of Woodhawk Creek	1 Acre	Small retention reservoir in steep drainage.
10	T. 23 N., R. 21 E. Sec. 24	Center of unit along Woodhawk Creek	1 Acre	Small retention reservoir in steep drainage.
11	T. 23 N., R. 21 E. Sec. 13	Center of unit	1 Acre	Small retention reservoir in steep drainage.
Vehicle Ways				
1	T. 23 N., R. 21 E. Secs. 21 & 22	West side of WSA	1.0 Mile	Access to reservoir.
2	T. 23 N., R. 21 E. Sec. 22	Southwest part of WSA	.75 Mile	Access to reservoir.
Fences				
1	T. 23 N., R. 21 E. Secs. 1 & 12	Northwest corner of unit	.5 Mile	Three four-strand metal/wood post barbed wire fence along steep drainage.
2	T. 23 N., R. 22 E. Secs. 17 & 18	Along east edge of unit	.75 Mile	Three four-strand metal/wood post barbed wire fence that is exposed to river.
3	T. 23 N., R. 21 E. Secs. 25, 26, & 27	Along south edge of unit	2.25 Miles	Three four-strand metal/wood post barbed wire fence that follows side of ridge.
Cherry-stemmed Road				
1	T. 23 N., R. 21 E. Secs. 13 & 14	Near center of unit	1.5 Miles	Partially graded dirt road that follows ridgetop.

Source: BLM, 1981

Primitive Recreational Opportunities

Primitive recreational possibilities in the unit consist of rock climbing on the cliffs (T. 23 N., R. 21 E., Sections 13 and 24), horseback riding on the ridge lines or main drainages, hiking, hunting and sightseeing. Visitors presently take vehicles on Deweese Road or on Sunshine Spur and these roads are also used for fire control routes. There is also some use of camping areas along the river by floaters, even though no potable water is available in the unit. Good campsites can also be found along Deweese Ridge in the middle of the WSA. Although access is very good, rain or snow quickly seal off the area, limiting the user season to May-October in dry conditions. Hunting quality is restricted by the difficulty of game retrieval and by fluctuating game populations. Rattlesnakes and the steep (sometimes loose) slopes provide hazards to the unwary visitor.

Supplemental Values

Woodhawk is characterized by colorful, broken topography. Most south slopes are open, banded clay. Two major drainages flow east-west into the Missouri, leaving a deeply eroded landform in their wake. About 2/3 of the WSA is covered with ponderosa pine and juniper. Unfortunately, the best view of this spectacular scenery is from the access roads and the cherry-stemmed Deweese Ridge Road.

The study area contains several prehistoric occupation sites. In historic times, woodhawkers cut timber there to fuel steamboats on the Missouri (hence the name of this WSA) and the unit was probably traversed by Chief Joseph's Nez Perce in their attempt to escape to Canada in 1877. The Indians demanded supplies from a U.S. Army supply dump on Cow Island (next to the WSA), a sharp fight ensuing when the Army refused to cooperate.

The Corps of Engineers built a wing dam in 1881 between Cow Island and the mainland to deepen the channel around Cow Island. Cow Island was also a reshipment point for freight from steamboats stopped by the low water in the river upstream.

COW CREEK WSA

The 34,050 acres of public lands in the Cow Creek WSA are in south Blaine and Phillips Counties next to Cow Creek. Of this unit, 2,018 acres are in the "Wild" Section of the Upper Missouri Wild and Scenic River Management Corridor. The border of the WSA is formed by roads, private land, Montana State land, the Missouri River and topographic contours. Boundaries are extremely difficult to locate on the ground except for the roads.

Naturalness

There are five cherry-stemmed roads in this unit and several developed areas along the northwest and southern boundary roads (see Table 3.18). Most developments—reservoirs, vehicle ways and fences—are associated with livestock grazing. Seven petroleum drilling pads and access ways are also scattered throughout the WSA.

The developments in many cases are screened by rugged topography and vegetation; the majority of Cow Creek is apparently natural. There are several developed areas that adversely affect naturalness. A 600-acre area east of Saskatchewan Butte (T. 25 N., R. 23 E., Section 31 and T. 24 N., R. 23 E., Sections 5, 6, 7 and 8) has two reservoirs, a diversion dam, three vehicle ways and a powerline, all readily visible in the flat, sparsely vegetated area. Another developed area of about 1,500 acres of rolling prairie in the southeast corner of the unit contains 6 vehicle ways (totaling 3½ miles) and 2 easily seen reservoirs.

The majority of other developments that reduce the area's naturalness are found near Hay Coulee, Coyote Coulee, on the Shetland Divide and Winter Coulee ridges. Rehabilitation of existing developments would not take place if the WSA became wilderness unless they were found unnecessary for grazing management. Vehicle ways following ridges that are used mainly for hunting or sightseeing would revegetate through lack of use.

Solitude

Cow Creek is "L" shaped, about 15 miles long and ¼-7 miles wide. Most of the terrain is rugged and steep along the many drainages that feed into Cow Creek and the Missouri. The Bull Creek, Winter Creek and Hay Coulee drainages have spectacular sandstone cliffs forming the drainage walls. In sharp contrast, some parts of the WSA are rolling open prairie, particularly towards the southeast corner. Where slopes and soil allow, the vegetative cover is predominantly short prairie grasses, sagebrush and greasewood. Ponderosa pine, lodgepole pine, Douglas fir and juniper are prevalent throughout the WSA, with the densest stands growing along the northern end.

The topography provides excellent screening. Solitude opportunities are best along Squaw, Cabin and Winter Creeks and the lower reaches of Bull Creek. The size of these drainages combined with their lack of development supplement solitude. Visitors to areas outside these drainages and nearer the perimeter have more potential for human contact.

Solitude in other parts of Cow Creek is affected by the unit's configuration and the five cherry-stemmed roads. A farming operation which borders the study area near John Coulee and a ranch (T. 25 N., R. 22 E., Section 8) reduces solitude on about 1,800 acres in the northern end. A homesite occupied during the summer and a road are also visible (T. 25 N., R. 23 E., Section 31 and T. 24 N., R. 23 E., Sections 5 and 6).

In the northwestern end of the unit near Hay Coulee, a user would never be more than a mile from the perimeter of the unit. The cherry-stemmed road along the ridgetop and an adjacent ranch operation would force a visitor to follow the narrow drainages to seek solitude. The open, rolling and narrow parcel east of Saskatchewan Butte also has very little solitude. Activities around the homesite and road are always in sight.

The small groves of conifers in the prairie terrain of the southeast corner of Cow Creek provide little screening and can be seen from the southern boundary road and the Coyote Coulee cherry-stemmed road. The cherry-stemmed roads along the Winter Creek Ridge and the ridge (T. 23 N., R. 22 E., Section 1) are flat and also have few trees. These ridges are in constant view of vehicle traffic on the cherry-stemmed roads. Traffic along the roads outside the unit are easily seen and heard from these ridges. A person would have to drop below the ridge to have solitude.

Old buildings and vehicle ways near the Cow Island Recreation Area are visible from about 500 acres of the southwest end of the WSA. Occasional motorized boat traffic can be seen from the ridges in this part of the unit.

Another offsite distraction comes from the Landusky Mine in the Little Rocky Mountains, 15 miles away. Bright lights at night from the mine can be seen from a few locations in Cow Creek.

The WSA is in a National Guard jet fighter training zone; flights averaging eight daily at an altitude of 4,000 feet. Periodic disruptions of solitude should be expected.

Primitive Recreational Opportunities

Primitive forms of recreation in the WSA include hunting, horseback riding, hiking, photography and rock climbing; hunting is the most popular at the present time. Hunting is normally limited to areas around access roads because of the difficulty of retrieving game. The Upper Missouri Wild and Scenic River, adjacent to the unit, has increased public awareness of the WSA's recreational opportunities. People floating the river often stop to hike and explore within the unit.

Hazards to recreation in the WSA are presented by rattlesnakes, the lack of drinking water, the difficulty of travel in wet weather and the area's steep terrain. Steep slopes may channel use to the major drainages or finger ridges, congregating visitors in a few locations. Better camping sites can be found along ridges or near the river.

Access into Cow Creek is available along the northwest and southern boundaries and marginal access is also available from the Missouri River through public lands. Other accesses are controlled by private landowners. Wet weather and snow normally limit access to May-October or during dry weather.

TABLE 3.18: MANMADE FEATURES IN THE COW CREEK WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 25 N., R. 22 E. Sec. 7	North edge	1 Acre	Retention pit in head of drainage.
2	T. 25 N., R. 22 E. Sec. 18	North side near Hay Coulee	1 Acre	Small retention reservoir near head of drainage.
3	T. 25 N., R. 22 E. Sec. 30	North side in Hay Coulee	1 Acre	Very small pit reservoir.
4	T. 25 N., R. 22 E. Sec. 29	Near mouth of Squaw Creek	1 Acre	Very small pit reservoir.
5	T. 25 N., R. 22 E. Sec. 31	North side in Hay Coulee	1 Acre	Very small pit reservoir.
6	T. 24 N., R. 22 E. Sec. 15	On Phillips and Blaine County borders near center of unit	1 Acre	Small retention reservoir near head of drainage.
7	T. 24 N., R. 22 E. Sec. 22	Same as above	1 Acre	Small retention reservoir near head of drainage.
8	T. 25 N., R. 22 E. Sec. 29	Center of unit	1 Acre	Small retention reservoir near head of drainage.
9	T. 25 N., R. 22 E. Sec. 17	Northeast edge of unit	1 Acre	Small retention reservoir near head of drainage.
10	T. 25 N., R. 22 E. Sec. 19	Northwest part of unit	1 Acre	Small reservoir in Hay Coulee drainage.
11	T. 25 N., R. 22 E. Sec. 27	North-central part of unit	1 Acre	Retention reservoir in small drainage.
12	T. 25 N., R. 22 E. Sec. 26	North edge	1 Acre	Small pit reservoir near head of drainage.
13	T. 24 N., R. 23 E. Sec. 5	Near Saskatchewan Butte	1 Acre	Retention reservoir that is in a wide open area.
14	T. 24 N., R. 23 E. Sec. 5	Near Saskatchewan Butte	1 Acre	Small retention reservoir.
15	T. 24 N., R. 22 E. Sec. 14	Near Saskatchewan Butte	1 Acre	Retention reservoir that has had recent maintenance.
16	T. 24 N., R. 22 E. Sec. 27	West of Winter Creek drainage	1 Acre	Cherry-stemmed road leads to this reservoir and is well screened by trees.
17	T. 23 N., R. 22 E. Sec.2	South of Bull Creek near unit's south boundary	1 Acre	Dead Cedar Reservoir lies on flat ridge that is visible on ridgetop.
18	T. 23 N., R. 22 E. Sec. 3	Southwest side of unit	1 Acre	Retention reservoir in open area.
19	T. 23 N., R. 22 E. Sec. 11	Near south boundary of unit	1 Acre	Pit retention that is visible from surrounding area.
20	T. 24 N., R. 23 E. Sec. 33	Near south boundary of unit	1 Acre	Pit retention near head of drainage.
21	T. 24 N., R. 23 E. Sec. 34	Along southeast boundary of unit	1 Acre	Exposed retention reservoir that can be seen from surrounding area.
22	T. 24 N., R. 23 E. Sec. 20	Near end of Shetland Divide Ridge	5 Acres	Large exposed retention reservoir that is easily seen from surrounding area.
23	T. 24 N., R. 23 E. Sec. 22	Along east side of unit	2 Acres	Lies on flat and exposed ridge that is very visible.
Spring Development				
1	T. 24 N., R. 23 E. Sec. 29	Along Bull Creek	1 Acre	Has a vehicle way leading to it. It has a small metal tank that catches the water.
Vehicle Ways				
1	T. 25 N., R. 22 E. Secs. 7 & 18 T. 25 N., R. 21 E. Secs. 12 & 13	North end of unit	2.5 Miles	Constructed on and follows ridge to bottom of Hay Coulee.
2	T. 25 N., R. 22 E. Sec. 7	North end of unit	.25 Mile	Very primitive two wheel dirt track.
3	T. 25 N., R. 22 E. Sec. 7 T. 25 N., R. 21 E. Sec. 12	North end of unit	1 Mile	Very primitive access to Hay Coulee that shows occasional sign of construction.
4	T. 25 N., R. 22 E. Secs. 7 & 18	North end of unit	.75 Mile	Two wheel grass track leading out on the ridge.
5	T. 25 N., R. 21 E. Sec. 13	West of Hay Coulee	.5 Mile	Constructed access to a dry gas well. Shows very little use.
6	T. 25 N., R. 22 E. Sec. 18	East of Hay Coulee	.5 Mile	Two wheel grass track that leads to reservoir.

TABLE 3.18: CONTINUED

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
7	T. 25 N., R. 22 E. Sec. 19	Leads off ridge to Hay Coulee	.75 Mile	Constructed access to Hay Coulee but has been washed out.
8	T. 25 N., R. 22 E. Secs. 17 & 20	East of John Coulee	2 Miles	Two wheel dirt track leading down ridge that shows continuous use.
9	T. 25 N., R. 21 E. Sec. 25	East of Squaw Creek on east side of unit	.25 Mile	Constructed access to a dry gas well that shows very little use. Lies on top of ridge.
10	T. 25 N., R. 22 E. Sec. 34	On north end of unit	.5 Mile	Very primitive two wheel track that leads to reservoir.
11	T. 24 N., R. 22 E. Secs. 10, 11, 14, & 15	North center of unit	2 Miles	Was apparently used for access to a fire in the area. Much of it is part of a bladed fire break.
12	T. 24 N., R. 22 E. Secs. 14 & 15	North center of unit	.5 Mile	Two wheel primitive track that leads out to end of ridge.
13	T. 24 N., R. 22 E. Sec. 15	Center of unit	1 Mile	Constructed access to dry gas well. There are occasional deep cuts in side banks and numerous water barriers.
14	T. 24 N., R. 22 E. Secs. 15, 21, & 28	Center of unit	2.5 Miles	The access at its beginning shows moderate use. Towards the end it is difficult to follow. Little, if any, signs of construction.
15	T. 24 N., R. 22 E. Secs. 27 & 28	Center of unit	1.25 Miles	Very primitive two wheel grass track.
16	T. 24 N., R. 22 E. Secs. 27, 33, & 34	Center to south of unit	1.5 Miles	Shows signs of construction but has a very primitive appearance.
17	T. 24 N., R. 23 E. Sec. 5	East of Saskatchewan Butte	.25 Mile	Two wheel track to reservoir.
18	T. 24 N., R. 23 E. Secs. 5, 6, & 7	East of Saskatchewan Butte	.5 Mile	Two wheel track to reservoir.
19	T. 24 N., R. 23 E. Secs. 20 & 29	North of Bull Creek	.75 Mile	Primitive access to spring. There are signs of construction near Bull Creek.
20	T. 23 N., R. 22 E. Secs. 11 & 12	Along south boundary	.5 Mile	Primitive two wheel track that leads to reservoir.
21	T. 23 N., R. 22 E. Sec. 12	Along south boundary	.25 Mile	Alternate primitive two wheel track that leads to reservoir.
22	T. 23 N., R. 22 E. Secs. 1, 2, 3, & 11	Along south boundary	1.5 Miles	Primitive access along ridge.
23	T. 23 N., R. 23 E. Sec. 6 T. 24 N., R. 23 E. Sec. 32	Along south boundary	.5 Mile	Faint tracks leading to end of ridge.
24	T. 24 N., R. 23 E. Sec. 32	Along south boundary	.25 Mile	Faint tracks leading to end of ridge.
25	T. 24 N., R. 23 E. Secs. 32 & 33	Along south boundary	1 Mile	Two wheel track leading to end of ridge. Has had frequent use.
26	T. 24 N., R. 23 E. Secs. 28, 33, & 34	Along southeast boundary	.75 Mile	Two wheel track leading to end of ridge. Has had frequent use.
27	T. 24 N., R. 23 E. Sec. 33	Along southeast boundary	.25 Mile	Very faint two wheel track.
Fences				
1	T. 23 N., R. 22 E. Sec. 5	Near mouth of Bull Creek	.25 Mile	Three four-strand wooden post barbed wire fence.
2	T. 23 N., R. 22 E. Sec. 4	South center of unit	.25 Mile	Three four-strand wooden post barbed wire fence.
3	T. 24 N., R. 22 E. Secs. 13, 14, 22, & 23 T. 24 N., R. 23 E. Secs. 7, 8, & 17	Around Winter Creek drainage	6 Miles	Four-strand steel post barbed wire fence.
4	T. 24 N., R. 22 E. Secs. 11 & 14 T. 25 N., R. 22 E. Sec. 27	Near Cabin Creek drainage	2.5 Miles	Three four-strand wood and metal post barbed wire fence.
5	T. 24 N., R. 22 E. Secs. 20 & 21	Near Cow Creek on west edge of unit	.25 Mile	Three strand wooden post barbed wire fence.
6	T. 24 N., R. 22 E. Secs. 7 & 18 T. 25 N., R. 22 E. Secs. 19, 30, & 31	Near mouth of Squaw Creek	4 Miles	Three four-strand wood and metal post barbed wire fence.
7	T. 25 N., R. 22 E. Secs. 17, 18, & 19	West side of John Coulee	1.5 Miles	Three four-strand wood and metal post barbed wire fence.
8	T. 25 N., R. 21 E. Secs. 12 & 13	Along Hay Coulee	1.75 Miles	Three four-strand wood and metal post barbed wire fence.
9	T. 25 N., R. 21 E. Secs. 11 & 12	Crosses Hay Coulee	1 Mile	Three four-strand wood and metal post barbed wire fence.

TABLE 3.18: CONTINUED

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Dry Gas Wells				
1	T. 25 N., R. 22 E. Sec. 7	Near north edge of unit	1 Acre	Revegetated to a nearly natural appearance.
2	T. 25 N., R. 22 E. Sec. 18	West of John Coulee	1 Acre	Revegetated to a nearly natural appearance.
3	T. 25 N., R. 21 E. Sec. 13	Northwest corner	1 Acre	Revegetated to a nearly natural appearance.
4	T. 25 N., R. 21 E. Sec. 25	West edge of unit	1 Acre	Revegetated to a nearly natural appearance.
5	T. 25 N., R. 22 E. Sec. 19	Along Hay Coulee	1 Acre	Revegetated to a nearly natural appearance.
6	T. 24 N., R. 22 E. Sec. 15	In the center of unit	1 Acre	Revegetated to a nearly natural appearance.
7	T. 23 N., R. 22 E. Sec. 2	Near Dead Cedar Reservoir		Revegetated to a nearly natural appearance.
Diversion Dam				
1	T. 24 N., R. 23 E. Sec. 5	East of Saskatchewan Butte	.25 Mile	Lies in flat area and shows recent construction.
Powerline				
1	T. 24 N., R. 23 E. Sec. 5 T. 25 N., R. 23 E. Sec. 31	East of Saskatchewan Butte	1 Mile	Very visible within the entire section.
Cherry-stemmed Roads				
1	T. 25 N., R. 22 E. Secs. 7, 17, 18, 19, & 20	East of Hay Coulee	2.8 Miles	Constructed access route that follows ridgetop to Hay Coulee. Shows less use towards end of road.
2	T. 24 N., R. 22 E. Secs. 14, 15, 22, 26, & 27	West of Winter Creek	3.5 Miles	Constructed two wheel track road that leads to reservoir. Shows seasonal use.
3	T. 24 N., R. 22 E. Sec. 25 T. 24 N., R. 23 E. Secs. 17, 19, & 20	Follows Shetland Divide	2.25 Miles	Constructed two wheel track road that leads to a state section. Shows seasonal use.
4	T. 23 N., R. 22 E. Secs. 1 & 2 T. 23 N., R.23 E. Sec. 6	Leads to Dead Cedar Reservoir	1.5 Miles	Constructed for access to a gas well (now dry) and entry into a reservoir.
5	T. 24 N., R. 23 E. Secs. 21 & 22	In the southeast edge of unit	1 Mile	Seldom used access route along ridge. It has two wheel track appearance.

Source: BLM, 1981

Supplemental Values

Although the area is rough and dry, scenic features are a notable supplementary attribute of the Cow Creek WSA. Of particular beauty is a 4-mile long, sheer wall of sandstone that lies on the west side of the Winter Creek drainage. Wind and water have carved this wall into many castle-like formations suitable for climbing.

The WSA is also historically rich. Tipi rings, rock cairns and a buffalo jump indicate that the area was used extensively by early people. Along the west boundary, the Nez Perce Indians traveled the well-known Cow Island Trail during their escape attempt to Canada in 1877. The Winter Creek drainage was used for catching wild horses at the turn of the century. The box canyon above the creek formed a natural corral called "Horse Thief Pass." Along this canyon and near Shetland Divide names are etched in the sandstone that date back to the 1800's.

ANTELOPE CREEK WSA

This 12,350-acre WSA is in Phillips County, just north of the Missouri River. The unit includes 4,373 acres in a "Scenic" Section of the Upper Missouri Wild and Scenic River. This study area is divided by a road into two areas: the west part is 9,600 acres, the east 2,750. The eastern part was included for wilderness study because it is next to the Charles M. Russell National Wildlife Refuge's Antelope Creek WSA, recommended to Congress as suitable by the President.

Boundaries of the study area are formed by private land, public lands, county roads, Montana State land and the Missouri River. Except for the roads, the unit's border is difficult to locate on the ground.

Naturalness

The rough terrain of Antelope Creek has restricted most manmade features to ridges or access roads (see Table 3.19). The areas most affected are the northern half of the unit, Antelope Creek Road and the eastern border where there are reservoirs, springs and primitive vehicle tracks. The rest of the unit is very natural, has little development and is well screened from most outside impacts. A person needs only to drop from the ridges to escape these developments.

Developments are mostly to facilitate livestock grazing and would not be rehabilitated if the area became wilderness, unless they were found unnecessary for further grazing management. Vehicle ways on ridges used mainly for seasonal hunting or sightseeing would naturally revegetate from lack of use. Because of the location of manmade features, boundary modifications would not significantly increase the WSA's apparent naturalness.

TABLE 3.19: MANMADE FEATURES IN THE ANTELOPE CREEK WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 23 N., R. 23 E. Sec. 33	Off Antelope Creek Road	1 Acre	Butch Cassidy Reservoir. Small retention reservoir near head of drainage.
Water Well				
1	T. 23 N., R. 23 E. Sec. 27	On northeast edge of unit	1 Acre	Small well at bottom of Antelope Creek.
Vehicle Ways				
1	T. 23 N., R. 22 E. Secs. 25 & 26 T. 23 N., R. 23 E. Sec. 31	Along the Missouri	2 Miles	Very primitive two wheel track that receives very little use.
2	T. 23 N., R. 22 E. Secs. 14, 23, & 24	West half of unit	2.5 Miles	Unconstructed two wheel track that receives very little use.
3	T. 23 N., R. 22 E. Secs. 13 & 24	West center of the unit	1 Mile	Very primitive two wheel track that receives very little use.
4	T. 23 N., R. 22 E. Sec. 14	West center of unit	.75 Mile	Very primitive two wheel track that receives very little use.
5	T. 23 N., R. 22 E. Sec. 11	Northwest side of unit	.25 Mile	Two wheel track that follows ridge.
6	T. 23 N., R. 23 E. Secs. 7 & 18	Beings in the north center edge of unit	1 Mile	Two wheel track that follows ridge.
7	T. 23 N., R. 23 E. Secs 18, 19, & 30	Begins near north center edge of unit	1 Mile	Two wheel track that follows ridge.
8	T. 23 N., R. 23 E. Secs. 17 & 20	Near north center edge of unit	.25 Mile	Continuation of boundary road but very primitive in character.
9	T. 23 N., R. 23 E. Secs. 20 & 21	Near northeast edge of unit	.5 Mile	Primitive two wheel track that follows ridge.
10	T. 23 N., R. 23 E. Secs. 28 & 29	Off Antelope Creek Road	.25 Mile	Very primitive two wheel track that follows ridge.
11	T. 23 N., R. 23 E. Sec. 33	Off Antelope Creek Road	.25 Mile	Very primitive two wheel track that follows ridge.
12	T. 23 N., R. 23 E. Secs. 32 & 33	Off Antelope Creek Road	.25 Mile	Very primitive two wheel track that follows ridge.
13	T. 23 N., R. 23 E. Sec. 33	Off Antelope Creek Road	.25 Mile	Very primitive two wheel track that follows ridge.
14	T. 23 N., R. 23 E. Secs. 26 & 27	Near southeast edge	.75 Mile	Very primitive two wheel track that follows ridge.

Source: BLM, 1981

Solitude

Antelope Creek is oblong-shaped, approximately 8 miles long and 1-3 miles wide. The unit has typical river breaks topography: steep, highly eroded coulees formed by tributaries that drop towards the Missouri River. The rough terrain acts as a screen, especially in the south half of the WSA, which is isolated and hidden by the surrounding ridgetops. Most of the unit is barren or sparsely vegetated. Where slopes and soil allow, vegetation usually includes short prairie grasses, sagebrush and greasewood. Juniper, ponderosa pine, lodgepole pine and Douglas fir grow along the coulees, covering about 20-30% of the area and an occasional cottonwood can be found there or along the river.

Detractions to solitude in the WSA come from offsite impacts and the smallness of the unit. Since the WSA slopes toward the river, use could be channeled up the major drainages or finger ridges, congregating visitors in a few locations. The offsite impacts affecting solitude include vehicle use on the surrounding roads, particularly the Power Plant Road, U.S. Highway 191 and motorized boat travel along the river. The Power Plant Road affects the northern and western borders and is regularly used during the warm and dry months for access to the river. U.S. Highway 191 is an all weather highway bordering a small part of the WSA which is contiguous with a study area inside the Charles M. Russell National Wildlife Refuge. The traffic is visible and audible from nearly 25% of the 2,750-acre area, especially at night.

Other offsite impacts include the Landusky Mine and the jet training zone. Lights from the mine, 15 miles away from the unit, can be seen. The WSA is also flown over by jet aircraft at 4,000 feet, averaging eight daily. This would periodically affect the quality of solitude in the unit.

Primitive Recreational Opportunities

Primitive recreational opportunities in Antelope Creek include hunting, horseback riding, hiking, photography, rock climbing and fishing. Hunting is currently the most popular, normally being limited to ridges with roads and trails because of the rugged terrain. The Upper Missouri Wild and Scenic River is also an important recreational addition to the area. Visitors floating the river can camp along the unit's shoreline, fish from the bank, hike the coulees or enjoy the outstanding scenery.

Public access into the WSA is available along the Power Plant Ferry Road, the Antelope Creek Road and from the Missouri River by boat. Other access roads are controlled by private landowners. Rain or snow can make these dirt roads impassable. Weather conditions normally limit access to May-October or during dry weather.

Supplemental Values

The Antelope Creek WSA has a very scenic and rugged appearance. Its dry and heavily eroded scenery combines steep slopes of exposed shale with many narrow finger ridges. Trees are few and are normally concentrated near ridges.

The study area is also rich in historical significance. Artifacts of both prehistoric and historic eras may be found in the WSA, as the Missouri River was often used as the sole route through the region. Of particular historic significance is Kid Curry's Outlaw Hideaway next to the unit.

BRIDGE COULEE WSA

The 5,900-acre WSA is located in western Garfield County, overlooking the Musselshell River. The area is an island of public land bordered by roads. On the southeast, a state section and private lands lie between the unit and the county road. The roads create an easily located and identifiable boundary.

Naturalness

A reservoir, fence and vehicle trail in the south half of this unit (see Table 3.20) have little effect on naturalness as these features are well screened by the topography and vegetation. The cluster of reservoirs and vehicle trails in the northeast quarter are somewhat more noticeable since a fire in 1973 burned much of the vegetation. However, most of the WSA is apparently natural.

These developments are primarily associated with livestock grazing and would not be rehabilitated if the WSA became wilderness unless they proved unnecessary for grazing management. Because of the location of these features, boundary modifications would not significantly increase this WSA's apparent naturalness.

Solitude

Bridge Coulee is rectangular in shape, measuring 2 miles by 4. The distance from the center of the WSA to the perimeter is 1-2 miles.

Drainages in the study area run east to west, opening directly into the dense concentration of developments in the Musselshell River bottoms. Vehicle sounds on the county road to the west and the sounds of farm machinery funnel directly up these drainages, affecting the solitude. A ranch is just outside the WSA (T. 17 N., R. 29 E., Section 12). There are also regularly used roads on the north, south and east side of the unit. About 2,000 acres are adversely affected by these offsite disruptions. The WSA is also flown over by jet aircraft, averaging about eight flights daily at 4,000 feet.

Elsewhere, the unit is rugged enough to permit visitor isolation. Vegetation screening in Bridge Coulee also tends to lessen the impact of outside influences, especially in the center of the WSA. Fifty percent of the land is covered with timber, while open grasslands and eroding clay slopes make up the rest.

Primitive Recreational Opportunities

Hiking, rock collecting, nature photography, horseback riding and hunting are primitive recreational opportunities in this WSA. Present uses are limited to hunting (restricted by the difficulty of retrieving game and by

TABLE 3.20: MANMADE FEATURES IN THE BRIDGE COULEE WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 17 N., R. 30 E. Sec. 9	Northeast corner of unit	1 Acre	Small retention reservoir near head of drainage.
2	T. 17 N., R. 30 E. Sec. 9	Northeast corner of unit	1 Acre	Small retention reservoir near head of drainage.
3	T. 17 N., R. 30 E. Sec. 9	Along east edge of unit	1 Acre	Retention reservoir in steep drainage.
4	T. 17 N., R. 30 E. Sec. 21	Along southeast edge of unit	5 Acres	Retention reservoir in large drainage.
Vehicle Ways				
1	T. 17 N., R. 30 E. Sec. 9	Leads from east edge of unit	1 Mile	Two wheel grass track that follows the top of ridge.
2	T. 17 N., R. 30 E. Sec. 21	Southeast corner of unit	.25 Mile	Two wheel grass track access to reservoir.
3	T. 17 N., R. 30 E. Secs. 20, 28, & 29	Follows coulee from southeast border	1.5 Miles	Primitive two wheel track extending from the top of ridge to the bottom of drainage.
4	T. 17 N., R. 30 E. Sec. 9	Northeast corner of unit	.25 Mile	Two wheel track access to reservoirs.
Fences				
1	T. 17 N., R. 30 E. Secs. 4, 5, & 6	Follows north border of unit	2.25 Miles	Three four-strand wood/metal post barbed wire fence that follows the top of a ridge.
2	T. 17 N., R. 30 E. Secs. 28, 29, & 30	Crosses south portion of unit	2.5 Miles	Three four-strand wood/metal post barbed wire fence.

Source: BLM, 1981

fluctuating game populations) and occasional sightseeing by vehicle. The area has attractive scenery but it is less spectacular than the areas immediately adjacent to the Missouri River. Access into the WSA is good on graded and county roads but is limited to dry weather from May-October.

The rough terrain limits horseback riding opportunities to the southeast and tends to channel hikers to the ridgetops and drainage bottoms. Campsites can be found in the scattered clumps of ponderosa pine but potable water is not available. Rattlesnakes might present a hazard to visitors and wet weather and snow limit travel. Although various recreational activities can be experienced in Bridge Coulee, nothing in the WSA offers an outstanding recreational opportunity.

Supplemental Values

One value of this unit is its scenery. Bridge Coulee, Sandage Coulee and Smith Coulee run east to west, emptying into the Musselshell River. These drainages have deeply etched the open grassy benches, creating attractive river breaks scenery. Moderately dense stands of juniper and ponderosa pine grow on the steep hillsides, especially on north slopes and in sandstone soils.

In the three WSAs in Garfield County, the Hell Creek and Tullock Formations are exposed. These contain fossils of scientific interest. Excellent dinosaur skeletons have been found in the vicinity as well as those of early marsupials, mammals, smaller reptiles and fish. The area is one of importance to the paleontologist community.

MUSSELSHELL BREAKS WSA

The Musselshell Breaks WSA is approximately 8,650 acres in size, with boundaries of well traveled roads and/or state and private land on all sides. The Musselshell River roughly defines the western boundary but much of the bottom land between the river and the WSA is privately owned.

Naturalness

A road running east-west, built in 1979 through the center of the unit, was not evaluated in the intensive wilderness inventory. This road divides the unit into two parts of 3,900 and 4,750 acres and adversely affects the natural appearance of 10% of the unit. This way is presently eroding in steep areas and revegetating in the flats through lack of use and maintenance.

The WSA contains reservoirs, fences and vehicle ways (see Table 3.21) mostly associated with livestock grazing. These facilities would not be rehabilitated if the unit became wilderness unless they proved unnecessary for grazing management. Because of adequate forest screening, these developments do not affect the natural appearance of the center of the unit. This is especially true in the central and southern portions.

Because of the location of most manmade features, boundary modifications would not significantly increase this WSA's apparent naturalness.

Solitude

This unit is rectangular in shape; 2 miles by 4½ miles with a center-to-perimeter distance of 1-2½ miles.

The study area consists of drainages that run toward irrigated fields, farm buildings and a county road bordering the Musselshell River. Nearly 40% of the WSA is adversely affected by offsite activities. Reflections, dust and noise penetrate at least ½ mile into the unit from the west, being most noticeable from the ridge lines. The drainage bottoms and forest vegetation screen most of the road activities on the east side.

The WSA is part of a jet fighter training zone, so periodic disruptions of solitude should be expected. Only in the center core areas north and south of the bisecting road can a visitor be assured of finding solitude.

Primitive Recreational Opportunities

Primitive recreational opportunities include horseback riding, hiking, nature photography, rock collecting and hunting. Present uses are hunting and some sightseeing from vehicles. Access is good, with graded roads to the east and west. Wet or snowy weather, however, makes the roads impassable, limiting the visitor season from May-October. Campsites may be found along the ridge lines but potable water is unavailable. This WSA is interesting to visit, but doesn't offer outstanding recreational opportunities.

Supplemental Values

The most notable scenic portions of this unit are found in Haley, Wagner and Williams Coulees which open to the Musselshell River on the west boundary of the WSA. About 70% of the WSA is comprised of either open clay slopes or sage and prairie grasses; the remainder containing scattered ponderosa pine.

In this unit and the other WSAs in Garfield County, the Hell Creek and Tullock Formations are exposed and contain dinosaur fossils of great interest. Excellent Tyrannosaurus Rex, Triceratops, Anatossaurus skeletons have been recovered from the vicinity, as well as early marsupials, mammals, reptiles and fish. These finds are highly significant to the paleontological community.

TABLE 3.21: MANMADE FEATURES IN THE MUSSELSHELL BREAKS WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 16 N., R. 30 E. Sec. 22	Northeast corner of unit	1 Acre	Small retention reservoir located within a steep drainage.
2	T. 16 N., R. 30 E. Sec. 34	Center of the unit	1 Acre	Small retention reservoir located within a steep drainage.
Vehicle Ways				
1	T. 16 N., R. 30 E. Secs. 21, 22, 26, & 27	North half of the unit	2 Miles	Unconstructed two wheel access that follows ridgetop.
2	T. 16 N., R. 30 E. Secs. 33, 34, & 35	Crosses center of unit	2.8 Miles	Constructed access from ridge to river that is visible through center of unit.
3	T. 16 N., R. 30 E. Sec. 33	The center-west edge of unit	.7 Mile	Two wheel grass track along ridge.
4	T. 16 N., R. 30 E. Sec. 34	Center of unit	.25 Mile	Two wheel grass track along ridge.
5	T. 15 N., R. 30 E. Secs. 11 & 14	Southeast edge of unit	1.5 Miles	Constructed two wheel track that follows ridge.
6	T. 15 N., R. 30 E. Sec. 10	Along south edge of unit	.25 Mile	Two wheel grass track along ridge.
Fences				
1	T. 15 N., R. 30 E. Sec. 2	Along east edge of unit	.25 Mile	Short three four-strand wooden/metal post barbed wire fence.
2	T. 16 N., R. 30 E. Sec. 34	Within center of unit	1 Mile	Three four-strand metal/wood post barbed wire fence that crosses ridge.
3	T. 16 N., R. 30 E. Sec. 34	Within center of unit	.5 Mile	Three four-strand metal/wood post barbed wire fence that follows ridge.
4	T. 16 N., R. 30 E. Secs. 34 & 35	Lies near center-east side of unit	.5 Mile	Three four-strand metal/wood post barbed wire fence that follows ridge.
5	T. 16 N., R. 30 E. Secs. 26 & 35	Borders east edge of unit	1.9 Miles	Three four-strand metal/wood post barbed wire fence that borders unit.
6	T. 16 N., R. 30 E. Secs. 21, 22, 26, & 27	Along north half of unit	2.75 Miles	Three four-strand metal/wood post barbed wire fence that follows ridge.

Source: BLM, 1981

BILLY CREEK WSA

The 3,450-acre Billy Creek WSA, in Garfield County, is contiguous to both the CMR's 11,900-acre Billy Creek and 12,184-acre East Seven Blackfoot study units.

Billy Creek is segmented by roads into four parts ranging from 80 to 1,650 acres. Boundaries on the north are identifiable by Wildlife Refuge boundary signs places at regular intervals. Elsewhere, the unit boundaries are formed by private lands and are difficult to locate.

Naturalness

Scattered developments inside the WSA are mostly from livestock grazing and would not be rehabilitated if the WSA were designated wilderness unless the facilities were found unnecessary for further grazing management (see Table 3.22). Two reservoirs adversely affect the eastern part of Billy Creek as they are in an open area and a recent fire has burned away concealing vegetation. A fire trail 1 ½ miles long, also reduces naturalness in this part of the unit. The location of most developments and the smallness of the unit dictate that boundary modifications would not significantly increase the WSA's apparent naturalness.

Solitude

This unit is long and slender, extending 5 miles in length but only ½-2 miles in width. Distance from the center to the perimeter is as little as ¼ mile in some places.

No separate portion of the WSA is big enough to contain opportunities for solitude by themselves. The two westernmost parts are composed of moderately deep drainages fringed with timber, which offer good screening. The two easternmost parts have more rolling terrain and because of recent fires are comparatively open. Solitude there is highly affected by cultivated fields next door. Farm buildings and implements are audible and visible and traffic along the main county road can be seen from the south border. Two ranches (T. 21 N., R. 34 E., Section 18 and T. 21 N., R. 34 E., Section 15) are also visible from the east end of the WSA. There is occasional traffic on the roads between the parts of the unit and on the road (identified as a vehicle trail in the original inventory) which enters the far eastern part for 1 mile. These distractions would be rare and fleeting, however. This WSA is also part of the jet fighter training zone where an average of eight aircraft daily fly over at 4,000 feet. Periodic disruptions of solitude throughout the unit should be expected.

About 1,200 acres of the Billy Creek WSA are adversely affected by offsite influences. Without the addition of the Charles M. Russell National Wildlife Refuge lands to the north, solitude would not be exemplary.

Primitive Recreational Opportunities

Primitive recreational opportunities in the WSA could include hiking, backpacking, hunting, sightseeing and nature photography. Present uses are mainly hunting and sightseeing from vehicles. Hunting is limited by the difficulty of retrieving game and by changing game populations.

Because of the dividing roads, this unit has excellent access. Rain or snow, however, limit the user season from May-October during dry periods. The finger ridges have the best campsites because of the screening ponderosa pine, the presence of firewood and gentle slopes. Drinkable water is unavailable and rattlesnakes and steep cliffs present hazards to the unwary visitor.

TABLE 3.22: MANMADE FEATURES IN THE BILLY CREEK WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 21 N., R. 35 E. Sec. 6	East edge	1 Acre	Very visible reservoir on edge of unit.
2	T. 21 N., R. 35 E. Sec. 6	East edge	1 Acre	Older inconspicuous reservoir.
3	T. 21 N., R. 34 E. Sec. 5	West edge	1 Acre	Reservoir built in 1960, well screened by forest vegetation.
4	T. 21 N., R. 34 E. Sec. 5	West edge	1 Acre	1960 reservoir well screened.
5	T. 21 N., R. 34 E. Sec. 5	West edge	1 Acre	1960 reservoir silted in and revegetated.
Vehicle Way				
1	T. 21 N., R. 35 E. Sec. 6 T. 21 N., R. 34 E. Sec. 1	East edge	1.25 Miles	Goes through burned off section of unit.

Source: BLM, 1981

The two major limiting factors on recreation are the small size of the WSA and the difficulty of travel due to the broken terrain.

Supplemental Values

Supplemental values include the attractive river breaks topography. Timbered prairie grass slopes along with the muted, banded colors on the open clay slopes present a pleasant panorama towards the Fort Peck Reservoir.

Fossils in the Hell Creek and Tullock Formations exposed in the region are of value to paleontologists. Skeletons of dinosaurs and the remains of smaller reptiles, fish, early marsupials and mammals have been discovered. Two known sites are in this WSA.

SEVEN BLACKFOOT WSA

Seven Blackfoot, in northern Garfield County consists of about 20,250 acres, divided into three subsections by maintained roads. The unit is adjacent to two Charles M. Russell National Wildlife Refuge WSAs, East Seven Blackfoot (12,184 acres) and West Seven Blackfoot (7,096 acres). Boundaries on the sides except to the north (where it abuts against NWR) are on property ownership lines and are not easily discernable on the ground.

Naturalness

The reservoirs, fences and vehicle ways inside this WSA are mostly associated with livestock grazing (see Table 3.23). They would not be rehabilitated if the WSA were designated wilderness unless they proved unnecessary to grazing management. One group of vehicle ways seems to have been constructed to get to a recent fire. Most are concentrated in the southern half of the WSA. Many of the reservoirs are silting-in, are mostly well screened and not a substantial impact on the area's overall naturalness.

The most notable infringements on naturalness in this WSA are the bladed interior roads which divide the unit into three segments. There is occasional traffic on these roads as they provide the most convenient route from the Wilson Ranch to grain fields on the east side of the unit.

Because of the location of most developments, boundary modifications would not significantly increase the WSA's apparent naturalness. The size of Seven Blackfoot and its topographic and vegetative screening cause the apparent naturalness of the WSA to be only lightly affected by developments.

Solitude

This WSA is at least 3½ miles wide and 6 miles long with the distance from the center to the perimeter 2-3 miles. Except for the ridgetops, the WSA is topographically screened from most outside influences; being deeply eroded in the north, less so to the south. There is some channeling effect on visitors imposed by the drainage patterns but the numerous side drainages would probably lessen the concentration of people in a few areas in the unit.

Vegetation screening is good to excellent throughout, dense stands of ponderosa pine and juniper comprising almost 40% of the unit. Open bare slopes in the south have little vegetation screening, but the rough topography of that area provides good isolation.

Solitude is adversely affected by farms and ranches around the perimeter of the WSA. During late spring, summer and fall (which coincides with the major recreational use seasons), the noises of farm implements, dust and reflections would have a significant effect on solitude, especially from ridges and high points in the south half of the WSA. Outside influences would be minimal during the winter months. Nearby ranches are noticeable mainly from many ridgetops within the unit. These ranches are located in T. 21 N., R. 33 E., Section 20; T. 21 N., R. 33 E., Section 29; T. 20 N., R. 33 E., Section 13; T. 20 N., R. 33 E., Section 4.

This WSA is part of a jet aircraft training zone where eight flights are scheduled daily at 4,000 feet. Periodic disruptions of solitude throughout the unit should be expected from this source as well as from traffic on roads inside the WSA.

Primitive Recreational Opportunities

Primitive recreational opportunities available in the WSA include hiking, hunting, horseback riding, nature photography and sightseeing. Present uses are mainly hunting and sightseeing from vehicles. Hunting quality is restricted by the difficulty of game retrieval and the changing game populations.

Federally controlled access is from a county road near Chalk Butte, through a ¼-mile-wide finger of land into the WSA, and from the county road to the Wilson Ranch on the northwest side. Access through private land restricts visitor use. All access ways are impassable in snowy or wet weather, limiting use to May-October in dry conditions.

The steep terrain of this WSA would make recreational activities challenging. Successful negotiation of the Seven Blackfoot WSA requires stamina and a good map, with rattlesnakes and steep cliffs adding spice to the experience. No drinkable water is available. The nature of the WSA probably would limit visitors, adding to the solitude of those who chose to come to this unit for recreation.

Supplementary Values

Values include the area's wild, broken landform. A basin is created by erosion from the creek, leaving a vista of rugged, stark cliffs offset by clumps of ponderosa pine and rolling prairie meadows. The presence of Douglas fir in the WSA, noted in the initial inventory, is an unusual occurrence this far east and may be of scientific value.

Fossils can be found in the area as the fossiliferous Hell Creek and Tullock Formations are exposed in places. Dinosaur fossils—Tyrannosaurus, Triceratops and Anatosaurus—as well as the remains of smaller reptiles and fish, and even early mammals and marsupials have been found in the region, making it of considerable interest to the paleontologists.

TABLE 3.23: MANMADE FEATURES IN THE SEVEN BLACKFOOT WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 20 N., R. 34 E. Sec. 14	Southeast tip	1 Acre	Older revegetated development.
2	T. 20 N., R. 34 E. Sec. 9	Southeast tip	1 Acre	Older, well screened reservoir just off ridgetop. Silted in.
3	T. 20 N., R. 34 E. Sec. 5	Near south boundary	1 Acre	Located just off ridgetop.
4	T. 20 N., R. 34 E. Sec. 5	Near south boundary	1 Acre	Located within 200 yards of above.
5	T. 20 N., R. 34 E. Sec. 5	Near south boundary	1 Acre	Older, small reservoir found at head of broad, grassy drainage.
6	T. 20 N., R. 34 E. Sec. 6	Near south boundary in burned-off area	1 Acre	Well screened.
7	T. 21 N., R. 33 E. Sec. 35	Near south boundary in burned-off area	1 Acre	Located in bottom of Sawmill Creek.
8	T. 20 N., R. 33 E. Sec. 12	Right next to south boundary	1 Acre	Found on edge of flat bench.
9	T. 20 N., R. 33 E. Sec. 12	Right next to south boundary	1 Acre	On top of open ridge line.
10	T. 21 N., R. 33 E. Sec. 34	Near west boundary	1 Acre	Square outline is somewhat obtrusive but only small area impacted.
11	T. 21 N., R. 33 E. Sec. 22	Northwest portion of unit	1 Acre	Older, well screened improvement found in head of drainage.
12	T. 21 N., R. 33 E. Sec. 17	Northwest tip	1 Acre	Well screened by location in bottom of drainage.
13	T. 21 N., R. 33 E. Sec. 8	Northwest tip	1 Acre	Well screened by location in bottom of drainage.
14	T. 21 N., R. 34 E. Sec. 5	Northeast tip	1 Acre	Screened by forest vegetation.
15	T. 21 N., R. 34 E. Sec. 5	Northeast tip	1 Acre	Well screened by forest vegetation.
Spring Development				
1	T. 20 N., R. 34 E. Sec. 10	Southeast tip	1 Acre	Impacts limited area.
Vehicle Ways				
1	T. 21 N., R. 34 E. Sec. 33 T. 20 N., R. 34 E. Secs. 2, 3, 10, & 11	East side	2.75 Miles	Little used trail; shows up in wooded areas but is well screened.
2	T. 20 N., R. 34 E. Sec. 14	Southeast tip	.25 Mile	Provides access to Reservoir 1.
3	T. 20 N., R. 34 E. Secs. 5 & 6	Enters from south border	1.5 Miles	Possibly fire access; rapidly revegetating.
4	T. 20 N., R. 34 E. Sec. 6 T. 21 N., R. 33 E. Secs. 35 & 36	Connected to the above	.5 Mile	Provides access to two reservoirs.
5	T. 20 N., R. 33 E. Sec. 2	Enters from south border	.5 Mile	Ridgetop way which drops to bottom of South Sawmill Creek.
6	T. 21 N., R. 33 E. Secs. 33 & 34	Enters from west border	.75 Mile	Ridgetop road access to fence.
7	T. 21 N., R. 33 E. Secs. 34 & 35	Enters from west boundary	1.25 Miles	Two track trail winding up a wood fringed ridge line.
8	T. 21 N., R. 33 E. Secs. 22, 23, & 24	Enters from west boundary near north border	2 Miles	Leaves from Wilson Ranch. Two track.
9	T. 21 N.,R. 33 E. Secs. 23 & 24	Projection to CMR border from the above road	1 Mile	Hardly visible two track.
10	T. 21 N., R. 34 E. Sec. 31	Projection from road paralleling Seven Blackfoot Creek	.75 Mile	Shows some use.
Fences				
1	T. 20 N., R. 34 E. Sec. 2	East side	.5 Mile	Minor cross fence.
2	T. 20 N., R. 34 E. Secs. 11 & 12	East side	.5 Mile	1946 fence.
3	T. 20 N., R. 34 E. Sec. 11	East side	.25 Mile	Blocks drainage to cattle.

TABLE 3.23: CONTINUED

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Fences				
4	T. 20 N., R. 34 E. Secs. 4, 9, 10, & 15	Southeast tip	4.5 Miles	Follows Seven Blackfoot Creek.
5	T. 20 N., R. 34 E. Sec. 15	Southeast tip	.5 Mile	Minor cross fence.
6	T. 20 N., R. 34 E. Sec. 9	South side	.25 Mile	Minor cross fence.
7	T. 20 N., R. 34 E. Sec. 5	South side	.75 Mile	Four strand wood or metal fence.
8	T. 20 N., R. 33 E. Sec. 1	South side	.5 Mile	Heads down to Sawmill Creek, south branch.
9	T. 20 N., R. 33 E. Secs. 2 & 3 T. 21 N., R. 33 E. Secs. 33 & 34	West side	2 Miles	Allotment boundary fence.
10	T. 21 N., R. 33 E. Sec. 27	West side	.5 Mile	Heads down to Sawmill Creek.
11	T. 21 N., R. 33 E. Sec. 17	Northwest tip	.25 Mile	Minor cross fence.

Source: BLM, 1981

BURNT LODGE WSA

This 13,850-acre unit lies a mile north of the Fort Peck Reservoir on the Phillips-Valley County border. It is bounded by a combination of a road, private land, state land and public lands. Except for the road, the boundary is difficult to follow on the ground.

The southern border is contiguous with the Charles M. Russell National Wildlife Refuge's Burnt Lodge Wilderness Study Area (22,976 acres). The President has recommended that the NWR study area be designated wilderness, pending Congressional action.

Naturalness

Most of this WSA has a natural appearance. Its topography and trees hide the few developments (see Table 3.24). The vehicle ways lie along flat ridgetops that finger into the unit from the north. Most show old signs of construction but are seldom used and difficult to follow. A person can drop below the ridges to escape these imprints.

Developments are primarily associated with livestock grazing. If the WSA were designated wilderness, no attempt to rehabilitate facilities would be made unless they were unnecessary for grazing management. The vehicle ways have their primary use for seasonal hunting or sightseeing and would revegetate naturally through lack of use. Because of the location of most manmade features, boundary modification would not significantly increase this WSA's apparent naturalness.

Solitude

The unit is long and narrow, stretching 10 miles in length and ¼-5 miles in width. It has a typical river breaks topography formed by tributaries that drop mostly from the northwest to the river. The steep slopes are badlands, but the majority of the area is covered with low growing prairie grasses and forbs. Approximately 25% of the area supports scattered ponderosa and lodgepole pine, juniper and Douglas fir. Pockets of conifers offer excellent vegetative screening along the northern border and ridgetops.

The WSA is surrounded by a sparsely populated and undeveloped area. Offsite impacts are from traffic on the boundary roads and two homesites, one recently constructed and one under construction (T. 23 N., R. 33 E., Section 22 and T. 23 N., R. 33 E., Section 28). These homes lie on ridgetops that overlook two large drainages inside the unit, affecting 400-800 acres. The road that parallels the west border and the Plum Creek Road on the northeast is often used by the adjacent landowners. Farming operations within one mile of the unit are visible from the border and some of the northwestern ridges. The best opportunities for solitude are found in the southern half of the WSA because of the few developments there and its distance from outside distractions.

Topography and vegetation screen traffic on adjacent roads. Other minor offsite impacts include motorized boat travel on the Fort Peck Reservoir and a jet training zone. The unit is flown over by National Guard fighters on the average of eight times daily at 4,000 feet: these occasional aircraft might disrupt the solitude in the WSA.

Primitive Recreational Opportunities

Primitive recreation within the unit could include hiking, camping, hunting, horseback riding, rock climbing and photography. Hunting along the ridgetops with vehicles is the most popular use, pressure is heaviest in September during the archery season. Horseback riders and hikers can find very scenic traveling on the ridgetops along the C.M. Russell National Wildlife Refuge.

Challenges to users of this WSA are presented by a lack of drinking water, difficult access during wet weather, mediocre camping sites and occasional rattlesnakes and insects. The steep terrain could channel users to ridges or drainage bottoms.

Access is mostly controlled by private landowners but public access is available at the eastern end of Timber Creek Road or by walking through a portion of the C.M. Russell National Wildlife Refuge. Rain or snow often make the dirt roads in the unit impassable, limiting access to May-October during dry weather.

Supplemental Values

The Burnt Lodge WSA has the very scenic, rugged appearance typical of the Missouri Breaks. Its eroded terrain has exposed sandstone, sheer walls and castle-like formations suitable for climbing. Prehistoric and historic remains probably exist in the unit, but there have been no discoveries.

TABLE 3.24: MANMADE FEATURES IN THE BURNT LODGE WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 23 N., R. 33 E. Sec. 28	On Blue Ridge near west edge of unit	1 Acre	Small retention reservoir hidden by terrain.
2	T. 23 N., R. 33 E. Sec. 32	In Armstrong Coulee near west edge of unit	1 Acre	Small retention reservoir hidden by terrain.
3	T. 23 N., R. 33 E. Sec. 32	In Armstrong Coulee near west edge of unit	1 Acre	Small retention reservoir hidden by terrain.
4	T. 23 N., R. 33 E. Sec. 34	East side of Blue Ridge	1 Acre	Small retention reservoir hidden by terrain.
Vehicle Ways				
1	T. 23 N., R. 33 E. Secs. 28, 33, & 34	Along Blue Ridge	2 Miles	Primitive two wheel track that follows ridge. Shows signs of blading but is only used seasonally.
2	T. 23 N., R. 33 E. Secs. 22, 26, & 27	Along Swede Ridge	1.3 Miles	Same as above.
3	T. 23 N., R. 33 E. Sec. 23	Along Swede Ridge	1 Mile	Same as above.
4	T. 23 N., R. 33 E. Sec. 11	Near north boundary unit	1.1 Miles	Primitive two wheel track.
5	T. 23 N., R. 33 E. Secs. 12 & 13 T. 23 N., R. 34 E. Sec. 18	Through center of unit	2.8 Miles	Constructed access that shows very little use. Most of the route does not show recent maintenance. Majority of use is near the beginning of the route.
6	T. 23 N., R. 34 E. Secs. 7 & 8	South of Plum Coulee	1.1 Miles	Two wheel grass track that follows the top of a ridge.
7	T. 23 N., R. 34 E. Sec. 6	South of Plum Coulee	.6 Mile	Two wheel grass track that follows the top of a ridge.
8	T. 23 N., R. 34 E. Secs. 4, 5, 9, & 10	Along Plum Creek	2.2 Miles	Constructed access through Larb Hill to Plum Creek. The route is now seldom used and difficult to travel since a better route has been developed.
9	T. 23 N., R. 34 E. Secs. 4, 5, 8, & 9	Along Plum Creek	1 Mile	Intermittent two wheel track that follows Plum Creek.
10	T. 24 N., R. 34 E. Sec. 31	North edge of unit	.5 Mile	Primitive two wheel grass track.
Fences				
1	T. 23 N., R. 33 E. Sec. 32	West edge of unit	.25 mile	Three four-strand metal/wood post barbed wire fence.
2	T. 23 N., R. 33 E. Sec. 28	West edge of unit	1 Mile	Three four-strand metal/wood post barbed wire fence combined with natural barriers.
3	T. 23 N., R. 33 E. Secs. 11, 12, & 13 T. 23 N., R. 34 E. Secs. 7, 18, & 19	Center of unit	3 Miles	Three four-strand metal/wood post barbed wire fence combined with natural barriers.
4	T. 23 N., R. 33 E. Secs. 1 & 12 T. 23 N., R. 34 E. Sec. 6	North edge of unit	2 Miles	Same as above.

Source: BLM, 1981

TERRY BADLANDS WSA

This WSA (43,450 acres) is west of Terry, Montana in Prairie County, along the Yellowstone River. It is divided into three segments by the Calypso Trail, an improved and regularly-used road.

The unit is bordered on the north by Montana State and private lands and a gravel county road; the south by Custer Creek, private and state land; the east by the Yellowstone River, private land and a road and the west by private and state land.

Naturalness

Most of the study area has very rugged terrain, hiding most manmade features. The southeastern border near Crooked Creek, however, is an exposed area. Many vehicle ways and reservoirs (see Table 3.25) are evident in this 2,000-acre parcel.

The Terry Scenic Overlook along the northeast boundary, is served by a well used gravel road. The overlook is marked by a sign and serviced by a cherry-stemmed road. Since the features are well screened by the topography, impacts are slight.

There are 11 vehicle ways totaling 23 miles in the WSA. These often follow flat ridgetops. They affect the naturalness in about 1,500 acres of the unit.

Developments in Terry Badlands are mostly associated with livestock grazing. There would be no attempt to rehabilitate these facilities should the WSA be designated wilderness unless they were unnecessary for grazing management. The vehicle ways now present are not a major impact on naturalness and need no rehabilitation. Because of the location of most manmade features, boundary modification would not increase this WSA's apparent naturalness.

Solitude

The Terry Badlands are roughly triangular in shape, measuring approximately 10 miles across the base (along the Yellowstone River) and 8 miles from the base to the tip in the northwest corner. Center-to-perimeter distance is 4-5 miles.

The WSA is well screened by the rugged topography except in the more open southeast portion. Sights and sounds from the highways and railway extend at least 2 miles into the unit's southern part. With the human activities in view from the ridgetops and sounds being channeled up the drainages, approximately 10% of the area is influenced by mans activities.

Vegetation shielding is limited, except for patches of limber pine in the northwest which screen some 800 acres. The scenic overlook in the extreme northeast corner is accessed by a cherry-stemmed road, but is well screened by scattered junipers and ponderosa pines.

Other adverse effects on solitude include traffic along the Calypso Trail and other trails which enter the unit, especially from the southeast. The noise, dust and reflections from occasional vehicles, however, have only local impact due to the excellent topographic screening.

The Terry Badlands are in the path of B-52 training flights; these flights are 400-800 feet off the ground and may occur daily.

Overall, solitude values are excellent due to the topographic screening, the large size of the unit and the scattered manmade features through the WSA.

Primitive Recreational Opportunities

Terry Badlands are accessible on the north by county roads, the east by the Yellowstone River and in the center by the Calypso Trail. The WSA is extremely rugged. Recreational opportunities are mainly hunting or sightseeing from vehicles. There is an established overlook (T. 12 N., R. 50 E., Section 2). There are several places for enjoyable overnight camping. Drinking water is unavailable, limiting the length of stay and the hiking range of backpackers. The soils are primarily gumbo and are not passable in wet weather. Winters are harsh and the terrain limits winter sports.

Hazards such as occasional rattlesnakes, steep unstable terrain, extreme weather conditions and the lack of drinking water characterize this WSA. It is an excellent area for wilderness users who enjoy travel, back country hunting, rock and fossil collecting and the spectacular badlands scenery.

Supplemental Values

The Terry Badlands contain stands of limber pine, unusual this far east. The WSA also has whole petrified logs, the preserved history of past vegetation in the area.

Geologic features include sandstone bridges, table tops, spires and buttes formed by thousands of years of wind and water erosion. They give the WSA outstanding scenery.

The Terry Badlands are rated high in potential archeological resources with an estimated 3-5 sites per square mile. Historically, U.S. Army troops carved graffiti on Sheridan Butte in the Badlands in the 1870's and dug rifle pits on a butte to the north of the WSA.

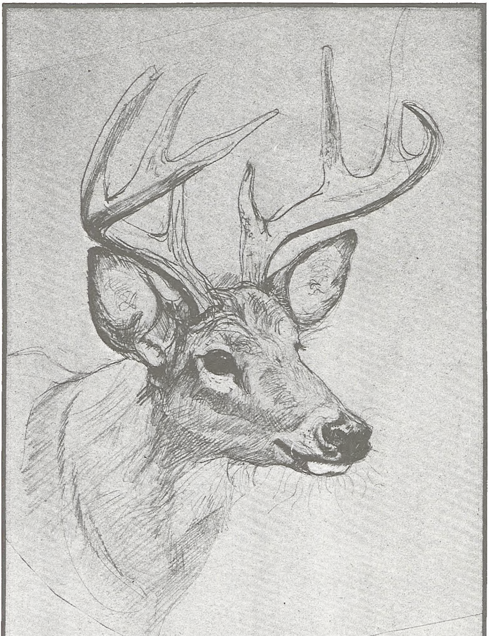
TABLE 3.25: MANMADE FEATURES IN THE TERRY BADLANDS WSA

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Reservoirs				
1	T. 12 N., R. 49 E. Sec. 5	Northwest corner	2 Acres	Small reservoir in head of drainage. Well screened.
2	T. 12 N., R. 49 E. Sec. 7	Northwest corner	5 Acres	Silted in reservoir.
3	T. 12 N., R. 49 E. Sec. 8	Northwest corner	2 Acres	Small reservoir at head of drainage.
4	T. 12 N., R. 49 E. Sec. 9	Northwest corner	5 Acres	Very poor condition. To be replaced by well.
5	T. 12 N., R. 49 E. Sec. 10	Northwest corner	2 Acres	Small reservoir in head of drainage. Well screened.
6	T. 12 N., R. 49 E. Sec. 17	Northwest corner	10 Acres	Stoney reservoir. Well screened in rugged drainage.
7	T. 12 N., R. 49 E. Sec. 19	West side	20 Acres	Large reservoir in open drainage.
8	T. 12 N., R. 49 E. Sec. 20	West side	2 Acres	Small reservoir in rolling breaks.
9	T. 12 N., R. 49 E. Sec. 22	Center of unit	5 Acres	Silted in reservoir in rough terrain.
10	T. 12 N., R. 49 E. Sec. 29	West side	10 Acres	Good condition. Head of drainage.
11	T. 12 N., R. 49 E. Sec. 32	West side	20 Acres	Hunter Reservoir; abandoned; washed out.
12	T. 11 N., R. 49 E. Sec. 2	South-central part of unit	5 Acres	1953 reservoir. In rolling terrain.
13	T. 11 N., R. 49 E. Sec. 9	South side	2 Acres	Small reservoir in drainage bottom.
14	T. 11 N., R. 49 E. Sec. 12	Southeast corner	5 Acres	Reservoir in open terrain along unit boundary.
15	T. 11 N., R. 49 E. Sec. 13	Southeast corner	5 Acres	Built in 1954. Located in open drainage.
16	T. 11 N., R. 50 E. Sec. 6	Southeast corner	5 Acres	Open terrain surrounding.
Spring Developments				
1	T. 12 N., R. 49 E. Sec. 5	Northwest corner	1 Acre	Screened area.
2	T. 12 N., R. 49 E. Sec. 1	North side	1 Acre	Bootlegger Spring. Built 1967.
3	T. 12 N., R. 49 E. Sec. 2	North side	1 Acre	Old spring with servicing trail.
4	T. 12 N., R. 49 E. Sec. 10	North side	1 Acre	Old spring serviced by way of Calypso Trail.
5	T. 12 N., R. 50 E. Sec. 18	Central in the unit	1 Acre	Good condition. Calypso Spring.
Wells				
1	T. 12 N., R. 49 E. Sec. 5	Northwest corner	1 Acre	Screened area.
2	T. 12 N., R. 49 E. Sec. 7	Northwest corner	1 Acre	Screened area.
3	T. 12 N., R. 49 E. Sec. 26	Center of unit	1 Acre	Chart Well drilled in 1972.
4	T. 12 N., R. 49 E. Sec. 35	Center of unit	1 Acre	Haughain Well 2 built in 1937.
5	T. 12 N., R. 50 E. Sec. 4	North side	1 Acre	Built in 1973. Possibly potable.
6	T. 12 N., R. 50 E. Sec. 28	East side	1 Acre	Right off Calypso Trail. Located on edge of WSA.
7	T. 12 N., R. 50 E. Sec. 31	East side	1 Acre	Train Well. Drilled by BLM, 1962.
8	T. 12 N., R. 50 E. Sec. 32	East side	1 Acre	Swank Well. Possibly potable.

TABLE 3.25: CONTINUED

Feature	Legal Description	Location Within Unit	Approximate Length/Area	Remarks
Vehicle Ways				
1	T. 12 N., R. 49 E. Secs. 1 & 2	Northwest edge	1.5 Miles	No Miles City DO project number. Services two developed springs.
2	T. 12 N., R. 49 E. Secs. 4, 5, 9, & 10	Northwest edge	3 Miles	No Miles City DO project number. Access to spring.
3	T. 12 N., R. 49 E. Secs. 5, 8, & 17	Northwest corner	3 Miles	Follows Crooked Creek drainage. Access to state section.
4	T. 12 N., R. 49 E. Secs. 6 & 8	Northwest corner	2 Miles	Ridgetop two track.
5	T. 12 N., R. 49 E. Secs. 31 & 32	West side	.75 Mile	Access old reservoir.
6	T. 12 N., R. 49 E. Secs. 20, 28, 29, 30, 31, & 32	West side	3.75 Miles	Jeep trail which provides access to several reservoirs and two cross fences.
7	T. 11 N., R. 49 E. Secs. 12 & 13 T. 11 N., R. 50 E. Sec. 18	Southeast edge	1.5 Miles	Provides access to a reservoir.
8	T. 11 N., R. 50 E. Sec. 18	Southeast edge	.25 Mile	Provides access to a fence.
9	T. 11 N., R. 50 E. Secs. 30, 31, & 32	East side	2 Miles	Continuation of trail mentioned above, T. 11 N., R. 50 E., Sec. 18.
10	T. 11 N., R. 49 E. Secs. 1 & 2 T. 11 N., R. 50 E. Sec. 6 T. 12 N., R. 49 E. Sec. 35	East-central portion	2.5 Miles	Provides access to a well and reservoir; two forks included.
11	T. 11 N., R. 49 E. Secs. 6 & 12 T. 12 N., R. 49 E. Sec. 26 T. 12 N., R. 50 E. Sec. 31	East-central portion	2.75 Miles	Passes through state and private land. Provides access to a well and reservoir.
Motorcycle Trail				
1	T. 12 N., R. 50 E. Secs. 15 & 21	East edge of unit	1.5 Miles	Trail goes up Lost Boy Creek and connects with Sullivan Creek.
Fences				
1	T. 13 N., R. 49 E. Secs. 34 & 35	North side	.25 Mile	Short cross fence.
2	T. 13 N., R. 49 E. Sec. 26	North side	1 Mile	Four strand wood/steel post fence.
3	T. 12 N., R. 49 E. Secs. 6, 7, 18, 19, 30, 31, & 32	Follows west boundary	8 Miles	Forms entire west boundary.
4	T. 12 N., R. 49 E. Secs. 17 & 18	Goes in from west boundary	2 Miles	Four strand wood post.
5	T. 11 N., R. 49 E. Secs. 14 & 23	South edge	1.5 Miles	Four strand wood post.
6	T. 11 N., R. 50 E. Secs. 18 & 19	Southeast corner	1 Mile	Forms southeast boundary.
7	T. 12 N., R. 50 E. Secs. 28, 32, & 33	East side	2 Miles	Forms part of the east boundary.
8	T. 12 N., R. 49 E. Secs. 4 & 5	Northwest side	.25 Mile	Forms part of northeast boundary.
9	T. 12 N., R. 49 E. Sec. 21	West-central portion of unit	.25 Mile	Cross fence in coulee bottom.
10	T. 12 N., R. 49 E. Sec. 28	West-central portion of unit	.25 Mile	Cross fence in coulee bottom.
Cherry-stemmed Road				
1	T. 12 N., R. 50 E. Sec. 2	Northeast corner of unit	.2 Mile	Access to scenic overlook.

Source: BLM, 1981



FOUR

IMPACTS

IMPACT ANALYSIS

Wilderness designation would not create an irretrievable or irreversible commitment of any multiple use resource within the 12 WSAs. Wilderness would restrict or stop the development of certain natural resources to maintain an area's natural character. If in the future, Congress feels resources present in wilderness must be developed in the national interest, they can modify the law to allow it.

The long-term impacts and commitments of the multiple use resources for the All or Partial Wilderness Alternatives are based on the Department of the Interior, Bureau of Land Management, Final *Wilderness Management Policy* (WMP). The Montana State BLM Director has further defined certain of the policies. Appendix 4.1 describes the State Director's interpretation of key management concerns.

The short-term impacts and commitments of the multiple use resources are based on current BLM management framework plans (MFPs).

GENERAL IMPACTS

All Wilderness Alternative

The following section describes impacts by resource that would be common to all 12 WSAs if they were designated wilderness. These common factors will not be discussed in the WSA specific analysis that follows.

CLIMATE—AIR QUALITY

GEOLOGY—TOPOGRAPHY

Neither the climate, air quality, geology nor topography of any of the units would be affected by wilderness designation.

CULTURAL RESOURCES

The strength of cultural evidence is in relation to the naturalness of the site where it's found. An artifact, object, structure or other feature might be significant, but the association or context in which it's found may be much more significant. When the evidence or site is disturbed, the archaeologist or historian has lost the opportunity for serious analysis. Wilderness designation would limit substantially, the potential for surface disturbance and help protect undiscovered sites.

Road closures would tend to limit the number of people entering an area and removing or damaging a cultural site. Certain educational efforts, undertaken as part of wilderness management, would tend to enhance appreciation for cultural features and human history.

The WMP provides for recording and monitoring cultural resources. Salvage of cultural sites is allowed, if necessary, to protect the resource.

RECREATION

Wilderness designation would mean some vehicle dependent individuals, especially the elderly, the handicapped and those relying on vehicles for recreation would be prevented from using vehicle ways or traveling off-road in the 12 WSAs. Hunters using vehicles to retrieve game would be especially affected.

The overall effect of closures is limited by the low use of these areas for recreational activities, other than hunting. Hunting and other recreational activities could continue in designated wilderness, but the mode of transportation would have to change from vehicle-based to foot or horseback.

This alternative would protect and enhance all types of wilderness-compatible, non-motorized recreation including hiking, walk-in hunting, camping, fishing, sightseeing and other activities.

WILDLIFE

There will be no significant impacts on the fisheries, or threatened or endangered species in any of the WSAs. Since no wildlife facility developments are planned in any of the WSAs, there will be no significant impacts on wildlife management projects.

The mere designation of a block of land as wilderness does not automatically infer either benefit or detriment to wildlife. A large block of land without vehicle access provides a secure area for wildlife. On the otherhand, the lack of vehicle access to large blocks of land often results in the loss of game harvest as a wildlife management tool. Any potential wildlife population increases because of blocking of large tracts of land is discussed by WSA.

In most cases, wilderness designation would probably make little difference in the number of game animals harvested because of the rugged landforms which limit vehicular use. The small size and configuration of the WSAs requires game animals to roam in and out of the units for their overall habitat requirements.

No change in species composition is expected to occur in the WSAs solely because of a wilderness designation.

Sport hunting of predators would be allowed in accordance with state laws. Predator populations have the potential to increase in all WSAs because of reduced hunting caused by restrictions on vehicle use.

SOILS AND WATERSHED

Wilderness designation would cause no major impacts to soils and watershed. Accelerated erosion on vehicle ways would gradually decrease, but would be a minor benefit when compared to the continuing natural geologic erosion. The erosion associated with livestock grazing would continue with this alternative. As no projects to improve soils or watersheds are proposed in any of the WSAs, no benefits would be foregone with this alternative.

LIVESTOCK GRAZING

There would be no changes affecting the level of domestic grazing. Future grazing operations would be managed consistent with the WMP. Modifications to current or proposed allotment management plans (AMPs) may result from directions provided by the Wilderness Management Plan that would be prepared for each unit designated as wilderness. Table 3.2 shows the present management status of each affected allotment.

Significant numbers of range developments are proposed or exist in all the WSAs. Construction and maintenance of range developments would be allowed, if determined necessary for resource protection and management. Range facilities would not be constructed solely to increase livestock grazing. In most of the WSAs, the topography and screening vegetation is adequate to allow harmonious location of developments. Several WSAs have had reservoirs and fences constructed which met the nonimpairment criteria of the *Interim Management Policy* (IMP). A WSA specific analysis of potential impacts to grazing management resulting from wilderness restrictions on range developments follows this discussion.

Motorized use of vehicle ways for livestock management is limited under the WMP, while provisions are made for emergencies and agreed upon for permitted uses. The WMP would allow certain motorized activities such as hauling bulls, transporting large quantities of salt and major fence repair. The most significant motorized activity not permitted, is checking on livestock. Vehicle ways are presently used by ranchers to check their livestock; during breeding season some of these ways may be used on a weekly basis. Often these trails are on ridges that allow observation of the location and number of cattle over a considerable area. Wilderness designation would, in some cases, increase the cost and/or reduce the effectiveness of these observations. Many of the WSAs include only parts of an allotment. The ranchers could quickly check their livestock with a vehicle in the portion lying outside the WSA boundaries, but would have to go on foot or horseback to check the part inside the WSA. In many cases, this could result in less effective livestock management of the area inside the WSAs. The dollar cost to the operators as a result of vehicle way closures would vary widely depending on use normally made of ways and the number of operators involved.

A worst case analysis of additional cost to operators from restrictions on vehicle use is shown in the Ranch Related Economic Impacts section for each WSA. These costs are based on the total miles of vehicle ways in the unit as shown on Table 3.6. In several WSAs the most effective way to observe and manage livestock would be by horseback. The worse case situation would be modified significantly in those cases.

There could be an increase in coyote populations due to restricted hunter access by motorized vehicles. Lambs and calves are most susceptible to coyotes, however, predation is not expected to increase since there are no lambing or calving operations in the WSAs. Policies to control predation are outlined in the WMP. If predators threaten livestock in or adjacent to the WSAs, the WMP allows for their control.

VEGETATION

Vegetation on vehicle ways would increase, but since intermittent use of some trails would continue this increase would be insignificant. Wilderness designation would provide long-term protection to vegetation due to restrictions on mineral entry and associated surface disturbances.

Control of natural and man caused fires would continue where life, resources or property were threatened. Given the intermingled land pattern of the WSAs and adjoining areas, control would have to be undertaken to protect other property in most cases.

The WMP allows chemical control of noxious weeds. Should noxious weeds become established in a WSA or become a threat to adjacent lands, chemical control would be allowed.

MINERALS

LEASABLE MINERALS

Based on the evaluations of mineral potential, exploration for and development of natural gas would be the major impact on wilderness values in the study areas. All the WSAs contain lands leased for oil and gas exploration, either prior to passage of FLPMA in October of 1976, (pre-FLPMA) or after that date (post-FLPMA). There is a key difference in how these two types of leases can be developed.

Pre-FLPMA leaseholders have valid existing rights to explore and develop the leases at anytime, even if the work adversely affects existing wilderness values.

In the case of post-FLPMA leases, any exploration or development work must not degrade wilderness values. Any activities which have the potential to degrade wilderness quality will not be allowed. A wilderness area with a high percentage of post-FLPMA leases would potentially restrict opportunities for leaseholders to explore their leases. Pre-FLPMA leases are constantly expiring and if re-issued, become post-FLPMA. By October 1986, all pre-FLPMA leases, not classified as producing leases, will have expired. There is therefore, an increasing impact to the minerals industry. It's uncertain whether oil and gas leases will be issued in designated wilderness. After December 31, 1983, all wilderness areas will be closed to new mineral leasing. If not leased, oil and gas reserves will not be removed, resulting in an undetermined economic loss to the minerals industry.

LOCATABLE MINERALS

If designated, lands within the 12 WSAs will be open to claim staking, prospecting, exploration, development and patenting under the mining laws until December 31, 1983. Mining operations are allowed but must not unnecessarily degrade wilderness character. After December 31, 1983, wilderness areas will be closed to mineral entry. However, development work, extraction, and patenting will be allowed to continue on valid claims located on or before that date. Valid claims located after Congressional designation but prior to December 31, 1983, could be patented for the mineral estate only.

SOCIAL AND ECONOMIC CONDITIONS

ATTITUDES TOWARD WILDERNESS DESIGNATION

Wilderness designation would not change the general attitudes or values of local residents. However, it would affect attitudes toward the BLM, the Federal Government and how some ranchers view the future of their operation.

As was stated in the Existing Situation, Local Attitudes Toward Wilderness Designation, most local residents are negative toward wilderness designation. They feel they were ignored during the inventory process, their attitudes are not being considered and the impacts they identified are being downplayed. In most cases wilderness designation would strengthen the desire that administration and planning for public lands should be at the local level.

In addition, wilderness designation would affect impacted ranchers' expectations of being able to remain in the ranching business. Most operators are simply not convinced that drastic changes, such as cuts in AUMs or policy modifications that prevent range improvement construction and maintenance, will not be forthcoming as administration changes occur. Ranchers are also concerned about the changes in ranch loan and sale values that could occur as a result of wilderness designation. If designation occurs, many ranchers feel their operation will be less viable than it was before designation.

National attitudes present a mixed picture. Public opinion polls indicate the country is about evenly divided on whether or not more wilderness areas should be designated (see Existing Situation, Regional and National Attitudes Toward Wilderness Designation). On the other hand, public response received via mail from outside the local area was in favor of wilderness. Those supporting wilderness designation in a general sense, rather than specific WSAs, can be expected to react positively if some or all areas are selected for designation.

RANCH RELATED ECONOMIC IMPACTS

Impacts on grazing management activities and policy interpretation are located in the section, Impacts to Livestock Grazing. The ranch related economic impacts presented here include the major impacts identified and those identified by Leroy Luft, AMEC (1982). Luft was hired by BLM to assess the impact of wilderness designation on ranch management and costs, and ranch loan and sale values. These identified impacts include increased costs due to limitations on vehicle way use and potential problems arising from restrictions on water development construction.

Some motor vehicle use on vehicle ways will be allowed under wilderness designation. For instance, the use of vehicles in breaking ice on waterholes, hauling in bulls, fence maintenance, hauling out sick animals, etc. will continue. The following analysis will assess the extra cost incurred because casual vehicle use to check cows, water, fences, etc. would not be allowed. Analysis for the extra costs incurred for breaking ice on waterholes, fence maintenance and delivering salt by horseback are available from AMEC (1982), but not included in this analysis. The first two activities will be done by vehicle and the third activity is minimal because of the availability of natural salt in the Breaks.

According to AMEC (1982), vehicle costs are about $2 per mile compared to $4 to cover a comparable area on horseback. The assumption is made that each vehicle way would be used 2 times per month for 6 months or a total of 12 round trips annually. The cost of labor is estimated to be $5 per hour (these and other assumptions are from AMEC 1982). Thus, the additional cost for a 2 mile vehicle way would be 2 miles x 24 x $2 additional cost = $96.

Since the estimated cost of labor may be low, a time estimate for the additional labor required has also been provided. AMEC (1982) estimates it would take three times as long to cover an area on horseback as it would by vehicle. In a vehicle the time needed is .27 hour per mile while the comparable horseback figure is .8. This would be an increase of .53 hours of labor per mile. For the previous example of the 2 mile vehicle way, the additional labor cost would be 2 miles x 24 trips x .53 additional hours per mile = 25 hours.

Some operators feel the casual use restriction would force them to hire another ranch worker; a relatively expensive, difficult type of worker to obtain. However, due to the allowances in the WMP, wilderness designation would not be the primary reason for such a need.

In the WSA specific information there are estimates of both the dollar cost for substituting horse travel for vehicles and the additional estimated hours of labor. In this analysis the term "major operator" refers to the operator(s) with most of the AUMs in the specific WSA.

It is assumed that most range development construction and maintenance will continue as planned. Most developments can be built in a nonimpairing manner and are justifiable for resource protection and grazing management. However, there are some cases where there may be problems with range development implementation. These cases are identified in the WSA specific information under Impacts to Livestock Grazing and

Ranch Related Economic Impacts. There is particular concern about low conception rates and the possibility of not being able to increase these rates. Stress associated with poor water distribution and trailing long distances between forage and water contribute to poor conception rates. Wilderness designation would create possible conflicts with the location of new water developments. Maximum livestock conception can be obtained only when both forage and water developments are adequate.

The impact of wilderness designation on loan and sale values is an issue. AMEC (1982) contacted a variety of people concerning this issue including representatives of the Federal Land Bank Association, the State Farmers Home Administration Office, the Production Credit Association and several insurance company representatives and realtors. The information collected indicates lenders would place a lower value for lending purposes on an operation containing wilderness. One representative of the Federal Land Bank, which is the largest holder of real estate in Montana, stated that on a case by case basis less money would be loaned and it would have to be repaid in a shorter time frame. Another Federal Land Bank representative said none of the BLM land in wilderness would be valued for lending purposes, as is their policy for grazing land in the Charles M. Russell National Wildlife Refuge (CMR). The Farmers Home Administration has a similar policy. They do not place any security value for lending purposes on land in wilderness, but they do make exceptions on a case by case basis. A representative of the Production Credit Association, which is a short term lender, currently holding one-third of all non-real estate farm debts in Montana, indicated they would decrease the valuation of the property for security purposes. This will be done because all loans must be examined from the long-term point of view. The potential loss in loan value for long-term loans by WSA has been calculated and is found in the Impacts by WSA. The assumptions used to define these values were based on AMEC's (1982) study and are:

(1) none of the BLM grazing in wilderness would be valued for loan purposes and,

(2) the value of an AU (animal unit, yearlong) on BLM administered land is .6 that of a deeded AU for lending purposes. With a deeded AU valued at $2,098, a BLM leased AU has a loan value of $1,259 ($2,098 x .6 = $1,259).

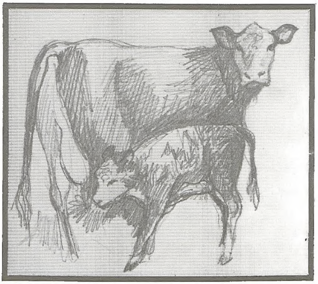
The total loss in loan value by WSA was calculated as follows. The total AUMs in a WSA for each alternative are divided by 12 which gives the number of AUs per WSA; the number of AUs are multiplied by $1,259 and this equals the loan value of BLM grazing by WSA (AUMs per WSA divided by 12 = AUs per WSA) = (AUs x $1,259 = loan value).

This loss of loan value is considered short term. After several years without a change in livestock use levels, lenders would probably be more willing to value BLM grazing permits in wilderness areas for lending purposes.

The potential loss of loan value is shown by WSA, not operator, since BLM has no data on the lendability of individual operators. The impact of these dollar values on operators would vary with their dependency on WSA grazing. Of the ranches with grazing allotments in WSAs, 67.5% are less than 15% dependent on those AUMs. The remaining 32.5% average 26% dependent with a high of 30% (see Table 3.11).

Almost no information on the impact of wilderness designation on sale value was available. Ranch sales have been infrequent recently because of high interest rate; however, it is probable that wilderness designation would give potential buyers cause for concern. According to Luft, "the prevailing factor may well be the influence of the lending agencies and their policies . . . ." "Ranch units, inclusive of potential wilderness areas, are not desirable livestock operations in the opinion of producers, lenders, realtors and others. Their opinions would indicate a lower land value for these units in comparison to similar units with no potential wilderness."

The cumulative impacts of increased costs and reduced loan value are difficult to assess because they depend upon the specific financial situation of the individual operators. Other factors also enter in as 17 of the operators also have grazing permits in the CMR. In addition, four operators and a grazing association have permits in more than one WSA. For these people, the total impact in terms of increased costs and decreased loan value could be greater.



COUNTY ECONOMIC IMPACTS

No alternative would affect livestock management enough to impact county employment or earnings.

There's an undetermined volume of natural gas in the 12 WSAs. Its dollar value cannot presently be calculated. Approximately 60% of the acreage in the WSAs contains mineral leases under pre-FLPMA regulations and can be explored and developed without wilderness constraints. Such mineral activities could affect the unit's potential for wilderness designation.

If no mineral resource is proven or developed and Congress designates the unit as wilderness, there's a potential that any existing minerals wouldn't be discovered or developed. It is uncertain if leases will be reissued in wilderness areas after existing leases expire.

The potential loss of tax revenues from reduced oil and gas development is a local issue. However, county property tax revenues would not be significantly affected. This conclusion is based on the following analysis; using Blaine County as the most extreme example of what would happen if all WSAs were designated wilderness. A total of 32,000 acres of Blaine County are in WSAs having a high rating for natural gas potential. This is an area approximately one-third the size of the Leroy Field (92,160 acres). The Leroy Field presently contributes 3.9% of Blaine County's property taxes. Assuming the 32,000 acres in WSAs would have the same production as the Leroy Field (see Existing Situation, County Economic Conditions), this area would contribute approximately 1.4% of the Blaine County property tax. This is calculated by dividing the WSA area in Blaine County by the Leroy Field's acreage and multiplying by Leroy Field's contribution to Blaine County's property taxes (32,000 divided by 92,160 = .347 x 3.9% = 1.4%). However, nearly 60% of the area in these WSAs presently contain pre-FLPMA leases which could be developed without wilderness constraints. Thus, the actual amount of tax revenue foregone, in the short term, by Blaine County would be the percentage of post-FLMPA leases times the Leroy Field's contribution to the county tax base (.4% x 1.4%), or 0.6%. This would be a minimal contribution foregone due to wilderness designation.

WILDERNESS

MULTIPLE RESOURCE BENEFITS FROM WILDERNESS DESIGNATION

In all 12 WSAs, wilderness designation could aid in the long term maintenance of important wildlife habitat. Designation would also protect native vegetation through limiting timber cutting, restricting mechanical land treatments or the introduction of non-native plants. Restricting vehicle use would protect those cultural artifacts that could be removed by vehicle and would reduce stress on some species of wildlife. Wilderness would ensure the maintenance of scenic values by requiring that all new projects blend into the natural landscape. Watersheds would be protected by the careful placement of water developments and surface disturbances.

WILDERNESS OPPORTUNITIES

The need for additional wilderness opportunities for urban dwellers within 5 hours driving time of the 12 areas in this study is not a significant consideration in their overall suitability for wilderness designation. As summarized in Table 3.13, abundant wilderness is available in the four state region. The Missouri River Breaks area presently has one designated wilderness (UL Bend) and 15 other study areas administered by the U.S. Fish and Wildlife Service which have been administratively-endorsed for wilderness and are awaiting Congressional action. There has been only minimal support for additional wilderness by local residents in central and eastern Montana based on thousands of letters and comments received since the inventory began in 1978. The local groups that have been most verbal have come out strongly against additional wilderness in the area. There has been support for several of the WSAs from state and national wilderness advocacy groups that would like wilderness protection for the Missouri River Breaks.

ECOSYSTEM REPRESENTATION

All 12 WSAs are classified as grama-wheatgrass-needlegrass ecotype. There is currently only one representative in the National Wild Preservation System (NWPS) of this ecotype. There are however, 15 other WSAs containing this ecotype located in the CMR which have been administratively-endorsed for wilderness and are awaiting Congressional action. The addition of the BLM study units to the NWPS would be an advantage to balancing the diversity of the national system, but because of the number of other units pending designation, it would not be a major consideration affecting the suitability of any particular WSA.

No Wilderness Alternative

This section describes the common opportunities foregone by resource if none of the 12 WSAs were designated as wilderness.

CLIMATE—AIR QUALITY
GEOLOGY—TOPOGRAPHY

There would be no affect on these environmental aspects without wilderness designation.

CULTURAL RESOURCES
WILDLIFE—SOILS AND WATERSHED
VEGETATION

The potential multiple resource benefits that could be provided by wilderness would be foregone. Because of the minimal development proposed in existing MFPs the benefits foregone, at least in the short term, would be minor.

RECREATION

There would be minimal or no opportunities foregone. The WSAs would continue to provide primitive and unconfined recreational opportunities.

LIVESTOCK AND MINERALS

Multiple use management without wilderness constraints would occur. There would be no opportunities foregone without wilderness designation.

SOCIAL AND ECONOMIC CONDITIONS

The negative attitude of local residents toward BLM would moderate if none of the WSAs were designated. Special interest groups favoring wilderness designation would be extremely dissatisfied. There would be no economic benefits foregone because of selection of the No Wilderness Alternative.

WILDERNESS

Any opportunity to expand the size and diversity of the National Wilderness Preservation System would be foregone if none of the WSAs were designated.

IMPACTS BY WSA

DOG CREEK SOUTH

All Wilderness Alternative

RECREATION

Wilderness designation would close 5,150 acres to off-road motorized recreational activity. A total of 5.75 miles of primitive vehicle ways would also be closed. The overall effect of road closure on motorized recreationists would be limited due to the low use of the area for recreational activities.

WILDLIFE

The available access to this WSA would allow continued hunting use, and game harvest would continue as a wildlife management tool. Wilderness designation would close four vehicle ways, totaling approximately 5.75 miles. However, hunting access would be available from the Missouri River on the north, Dog Creek Road on the south and Whiskey Ridge Road on the east.

LIVESTOCK GRAZING

There would be a very low impact to range development construction and maintenance because of the low number of planned and existing improvements. There is one reservoir planned and three existing. In addition there are 1.5 miles of fence and 5.75 miles of vehicle ways associated with grazing management. The fence can be reached by vehicle way and major maintenance work could be done with the use of a vehicle. The planned reservoir has been cleared for construction by the Resource Area Wilderness Specialist, as it can be built in a nonimpairing manner. The operators would not be allowed vehicle use on the ways for routine checking of livestock, water sources and fences.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a high probability of finding natural gas in this unit. All but 40 acres of this WSA is leased for oil and gas. Of this acreage 92.9% is pre-FLPMA and 6.3% post-FLPMA (see Figure 3.14).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. However, in the short term (the life of the lease) there would be no impact upon the minerals industry. Work on these leases could create an impact to wilderness values, even if the WSA were designated.

Development of post-FLPMA leases cannot damage wilderness values. Leaseholders could be restricted in the exploration and development of their leases.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore for and develop oil and gas reserves.

Coal is present in the WSA and has been mined nearby for personal use. However, neither coal nor any other mineral exists in commercial quantities in this unit.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses or foot travel for casual vehicle use would result in potential increased expenses of approximately $275 and about 75 additional hours of labor annually. The potential loss in loan value for long-term ranch loans could be as much as $56,655 depending on the lender. Three operators have permits in this area. The major operator, who has 90% of the AUMs in the WSA, would incur most of the increased expenses and reduced loan value.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

Wilderness designation would result in enhancement, protection and preservation of wilderness characteristics on approximately 5,150 acres. This unit is one of the smallest in this study and is barely above the 5,000-acre Congressional mandate. The unit's limited size is not adequate for ensuring a visitor's isolation from outside influences. Excellent opportunities for solitude are limited to a few isolated drainages. The small size restricts the usable space for primitive and unconfined recreation in the unit.

Primitive recreation opportunities are not outstanding. The scenery is good, but not a supplemental value to wilderness as there are many developed areas within view. There are indications this WSA contains a Blackfoot Indian burial area, but this cultural resource has not been fully evaluated.

MANAGEABILITY IMPACTS

The existing valid rights in the area are livestock grazing and mineral leases. The grazing permits will have a moderate impact as there would likely be conflicts stemming from wilderness designation with the effected permit-holder. Permittee use of motorized vehicles for facility maintenance or project development would be a periodic impact on wilderness values.

Approximately 93% of the acreage in this unit is contained in pre-FLPMA oil and gas leases. Exploration and development of these leases would create a significant wilderness management problem since such development can occur even if it impairs wilderness values.

The overall pattern of landownership is a detriment to wilderness manageability. The areas north, west and east of much of Dog Creek South are privately-owned. Adjacent lands on the benches and river bottoms are presently farmed. Further development on these adjacent lands would be outside the jurisdiction of BLM.

Road access to this WSA is through private land. One private landowner has indicated he would close access through his property if the unit were designated. There is public access from the Missouri River along the north border.

In addition to providing access, the Missouri River with its wild and scenic river designation offers legislative protection for the area and is a source of national interest.

DOG CREEK SOUTH

No Wilderness Alternative

RECREATION—WILDLIFE LIVESTOCK GRAZING—MINERALS SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

Selection of the No Wilderness Alternative would mean the loss of wilderness protection for 5,150 acres of public land. Under this alternative, the entire area would likely retain its natural character, at least in the short term.

Probable range management actions would have little effect on wilderness values.

Due to the probable existence of natural gas and/or oil underlying the unit, and the high percentage of acreage contained in pre-FLPMA leases, the potential exists for exploration activities. Impacts such as access roads, pipelines and gas or oil storage areas are possible and could adversely affect the natural values of this unit.

Approximately 75.8% of the land included in the Dog Creek South WSA is in the Upper Missouri Wild and Scenic River Corridor (UMWSR). These lands are legislatively protected to preserve natural quality. Within 1/4 mile of the river, lands in the "Wild" designated segments are closed to oil and gas development. Lands in the "Recreational" segment are protected to preserve scenic quality and to prevent unnecessary or undue environmental damage. Until regulations are issued on the mineral leasing of wild and scenic lands, expired leases are not being re-issued in the river corridor. This reduces the potential for damage associated with exploration and development, at least in the short term. Wild and scenic river designation to a large part ensures long-term protection of natural values which would otherwise be foregone in those portions of the WSA included in the UMWSR.

The existing MFP does not identify any proposed activities in Dog Creek South which would impair wilderness values.

STAFFORD

All Wilderness Alternative

RECREATION

Wilderness designation would close 4,800 acres to motorized recreational activity. A total of 2.75 miles of primitive vehicle ways would also be closed. As the boundaries of this area follow the edges of the roughest topography, off-road vehicle use is already diminished in many portions of this WSA.

WILDLIFE

The small size and available access of this unit would allow continued use of this area for hunting. Game harvest as a wildlife management tool would continue. Wilderness designation would close five vehicle ways totaling approximately 2.75 miles. However, hunting access is available from the Missouri River on the south, Birch Creek Hill Road on the north and Boiler Bottom Road on the east.

LIVESTOCK GRAZING

A very low impact to range development construction is expected because only one project, .5 mile of fence in Allotment 6222, is proposed. There are 4.5 miles of boundary fence, one reservoir and 2.75 miles of vehicle ways in the WSA. The boundary fence can be maintained from outside the WSA. Any major maintenance on the reservoir could be accomplished with heavy equipment normally used for such work in the area. The operators in the WSA would not be allowed to use the vehicle ways for routine checking of livestock and facilities.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a high potential for natural gas in this unit. Of the acreage in this WSA, 84.9% is included in pre-FLPMA oil and gas leases. There are no post-FLPMA oil and gas leases (see Figure 3.15).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease) there would be no impact upon the mineral industry. However, work on these leases could create an impact to wilderness values, even if the WSA was designated.

Approximately 13% of the area is presently in oil and gas simultaneous leases and will be issued by lottery. These leases, when issued, will have stipulations on exploration or development work to protect wilderness values. Leaseholders could lose the opportunity to work their leases.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness under present laws. The minerals industry would lose the long-term opportunity to explore for and develop oil and gas reserves.

Coal and bentonite deposits are present, but the quality is too poor for any commercial purposes.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses or foot travel for casual vehicle use would result in increased expenses of approximately $130 and about 35 additional h rs.of labor annually. The potential loss in loan value for long-term ranch loans could be as much as $20,144, depending on the lender. Two operators have permits in this area. As both utilize the vehicle ways any increased expenses would be shared.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

The Stafford WSA provides opportunities for solitude primarily within the steep, rugged drainages that open to the Missouri River. Persons using this WSA, however, would be within both the sight and sound zones of the nearby PN Ferry, farmed fields, ranch operations and the county roads servicing both the PN and Stafford ferries. The recreational opportunities while good, are not outstanding. Better opportunities for hiking, horseback riding, nature photography and rock climbing exist in other areas along the Missouri River. The small size, narrow configuration and extremely rugged terrain limit the usable area for wilderness recreationists.

The most important special feature of this WSA is its attractive scenery. The scenic value of this WSA would not be a supplemental value to wilderness as a number of manmade developments are within easy view.

MANAGEABILITY IMPACTS

Nearly the entire area is currently licensed for livestock grazing. This use would be compatible with wilderness designation. Very few livestock facilities are located in or proposed for this WSA and only minimal conflicts with the grazing program would occur.

A power site classification involves 1,787 acres of the unit. No projects are planned or are under construction.

Oil and gas leases could have a significant impact on the wilderness manageability of the unit. Nearly 85% of the area contains pre-FLPMA oil/gas leases. These leases can be explored and developed, even if they impair the area's wilderness characteristics.

The surrounding landownership pattern and privately-owned access present manageability difficulties. Nearly the entire northern boundary is comprised of private land. As some surrounding lands are intensively developed (a ranch adjacent to the west side and irrigated fields across the river on the east side), the lack of BLM's jurisdiction over these lands could mean an increased probability of major disruptions of solitude within the unit.

Access into the area, except along the Missouri River, is controlled by private landowners. A continuing problem thus would exist for wilderness recreationists visiting this area.

The UMWSR would be an advantage to wilderness management. In addition to providing access, the Missouri River offers protection for the area and is a source of national interest.

STAFFORD

No Wilderness Alternative

RECREATION—WILDLIFE
LIVESTOCK GRAZING—MINERALS
SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

Non-designation would mean the loss of wilderness protection for 4,800 acres. However, changes to natural features or reduction in opportunities for solitude would probably come slowly without wilderness designation. Range management would have little effect on wilderness values.

Due to the probable existence of natural gas and/or oil underlying this unit and the high percentage of acreage contained in pre-FLPMA leases, the potential exists for exploration activities.

There would be a chance that natural values would be diminished by development activities.

Approximately 90.5% of the land included in the Stafford WSA is in the UMWSR. These lands are legislatively protected to preserve natural quality. Within ¼ mile of the river, lands in the "Wild" designated segments are closed to oil and gas development. Lands in the "Recreational" and "Scenic" segments are protected to preserve scenic quality and to prevent unnecessary or undue environmental damage. Until regulations are issued on the mineral leasing of wild and scenic lands, expired leases are not being re-issued in the river corridor. This reduces the potential for damage associated with exploration and development, at least in the short term. Wild and scenic river designation ensures the long-term protection of natural values, otherwise foregone in those portions of the WSA included in the UMWSR.

The existing MFP does not identify any proposed activities in the Stafford unit which would impair wilderness values.

ERVIN RIDGE

All Wilderness Alternative

RECREATION

Wilderness designation would close 10,200 acres to motorized recreational activity. However, recreationists including the elderly and handicapped would still have motorized access on the two cherry-stemmed roads which overlook much of the scenic portions of the unit. Use of the Lone Tree/Ervin Ridge boundary road on the north, provides visitors a point for observation of the majority of the unit as well as recreational access.

WILDLIFE

The available access to the WSA would allow continued use of this area for hunting and game harvest. Wilderness designation would close nine vehicle ways, totaling approximately 5 miles and eliminate off-road travel. However, two cherry-stemmed roads totaling approximately 2.5 miles will remain open allowing vehicle access to much of the unit. Additional access is available from the Missouri River on the south, Lone Tree Ridge and Ervin Ridge Roads on the north, Barnard Ridge Road on the west and Gist Ranch Road and Ervin Ridge Roads on the east.

LIVESTOCK GRAZING

There is a potential for moderate to high impact to range development construction and maintenance. Opportunities to screen new developments range from excellent in the deep drainages on the south side of the WSA to poor on the benches in the north and west portions of the WSA where most of the proposed developments would be constructed. Two miles of fence, a cattle guard, four reservoirs, one well, one spring, 10,560 feet of water pipeline and one water catchment are proposed in this WSA. It may not be possible to build proposed projects in the less screened areas in a nonimpairing manner. Therefore, relocation or cancellation of those projects is possible in this WSA.

Currently there are 2.75 miles of fence, 10 water developments and 5 miles of vehicle ways used for grazing management. The developments can be maintained with heavy equipment normally used in this area. Vehicles could not be used for the routine checking of livestock and facilities other than for major maintenance, delivering supplies or emergencies. Additional costs would accrue where operators were required to ride horses or walk into the area.

No change in the management of the Ervin Ridge wild horse herd is expected due to wilderness designation.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a high probability of finding natural gas in this unit. All but 545 acres of this WSA are leased for oil and gas. Approximately 36.3% of the acreage in this unit is included in pre-FLPMA oil and gas leases and 52.7% is included in post-FLPMA leases (see Figure 3.16).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease) there would be no impact to the minerals industry.

The unit is nearly surrounded by the Leroy gas field. With the small size of the unit and its marginal screening on top of ridges, where exploration is likely to occur, it's doubtful that lease development could occur on post-FLPMA leases without damaging wilderness values. As over half of the acreage in the WSA contains post-FLPMA leases, there is potential for significant loss of opportunity to explore for natural gas.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

Development of nine mining claims on possible diamond-bearing formations would require an approved mining plan of operations which would consider the potential damage to wilderness values. If a satisfactory plan could be developed there would be no impact to the mineral developer. However, BLM has the authority to set conditions on the type and location of access which could create a conflict with the developer.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in potential increased expenses of approximately $240 and about 65 additional hours of labor annually. Potential loss in loan value for long-term ranch loans could be as much as $66,727, depending on the lender. Two operators utilize this area. Each has about half of the total AUMs in the WSA. Expenses incurred may be higher than estimated because some of the land is grazed in common and both operators may use the vehicle ways. The possible conflicts with location of new range projects as discussed under Livestock Grazing Impacts, could affect water distribution, thereby curbing attempts to increase conception rates which have been historically low in this area.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

The Ervin Ridge WSA provides opportunities for outstanding solitude, primarily within the steep rugged drainages that open to the Missouri River. However, the open bench areas along the north and west parts of the WSA are within view of several roads, farm fields and three ranch operations. The small size, narrow configuration and extremely rugged terrain limit the usable area for wilderness recreationists. The recreation opportunities described in the wilderness quality section while good, are not outstanding.

The most important special feature of this WSA is its attractive scenery. Wilderness designation would help protect the natural setting from most disturbances.

MANAGEABILITY IMPACTS

Manageability conflicts could occur with selection of this alternative. Two cherry-stemmed roads penetrate the unit to the depth of .5 and 1.25 miles respectively. The location of these roads (see Figure 3.3) are such that unrestricted vehicle use would periodically impact solitude opportunities in the western third of the unit.

Livestock grazing permits are issued for the entire area. While livestock grazing is compatible with wilderness designation, there is a potential for periodic disruptions to solitude from the presence of operators using vehicles for maintenance.

A power site classification covers 1,774 acres of the unit. Since it lies within the UMWSR, no projects are proposed or expected.

The unit currently has nine lode mining claims on possible diamond-bearing formations. (See Chapter 3 Minerals.) The potential that these claims are diamond-bearing is low (Hearn 1977, BLM 1982) and the cost of extracting them is high. Therefore, it is not expected that the claims will be mined. If they were mined and proved to be economically feasible, patent could be requested and granted creating private inholdings that would require vehicle access.

Portions of the unit are within two undefined, unnamed KGSs and 36.3% of the unit lies in pre-FLPMA leases. Approximately 2,100 acres are included in producing leases, meaning they will not expire as long as production is maintained. Pre-FLPMA and producing leases can be explored and developed even if they impair wilderness values. Since more exploration is expected, this could create a significant wilderness manageability problem. The probability of long-term surface disturbing activities from development on oil and gas leases is higher in this WSA than any other in this study.

Most of the WSA is surrounded by undeveloped public lands which help buffer much of the area from outside impacts. However, portions of the unit lie adjacent to private farmland and roads. Machinery and truck traffic impact portions of the unit particularly along the ridgetops.

Access is available only by seasonal roads or by boat from the Missouri River. The western end of the Ervin Ridge Road and Barnard Ridge Road provides the primary access to the unit and are controlled by private landowners. There is a primitive road that provides public access from the east end of the WSA. The lack of public access could create user and landowner conflicts.

The UMWSR would be an advantage to wilderness management. In addition to providing access and legislative protection, the river classification demonstrates the national importance of the wild characteristics of this area.

ERVIN RIDGE

No Wilderness Alternative

RECREATION—WILDLIFE—MINERALS SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

Non-designation would mean the loss of wilderness protection to 10,200 acres.

Changes to natural features, or reductions in opportunities for solitude would probably come slowly without wilderness designation.

The current grazing operations are nearly compatible with wilderness. However, vehicle use would continue unrestricted. This would create a continuing and long-term impact on the quality of solitude available in the Ervin Ridge WSA. There are 10 range management projects proposed in the unit which are consistent with the MFP. Some of these could have a negative impact on naturalness. Most could be constructed under the WMP but only in locations using construction techniques least imparing to wilderness values. The requirement not to impair wilderness values would not be necessary with this alternative.

Portions of the area currently have mining claims. This alternative would mean no wilderness restrictions on type or placement of mining access if the resources proved economically recoverable. Extensive development of mining claims could reduce the apparent naturalness of portions of this WSA, but such development is unlikely.

Approximately 49.6% of the land included in the Ervin Ridge WSA is in the UMWSR. These lands are legislatively protected to preserve natural quality. Within ¼ mile of the river, lands in the "Wild" designated segments are closed to oil and gas development. Until regulations are issued on the mineral leasing of "Wild" and "Scenic" lands, expired leases are not being re-issued in the river corridor. This reduces the potential for damage associated with exploration and development, at least in the short-term "Wild" and "Scenic" river designation to a large part ensures long-term protection of natural values which would otherwise be foregone in those portions of the WSA included in the UMWSR.

WOODHAWK

All Wilderness Alternative

RECREATION

Wilderness designation would close 8,100 acres to motorized recreational activity. Two minor vehicle ways would be closed, but access primarily for hunters, would still be available to the central portion of the area on the DeWeese Ridge cherry-stemmed road.

WILDLIFE

Available access for hunting and associated game harvest would not be altered significantly by a wilderness designation. One cherry-stemmed road, totaling approximately 1.5 miles provides access to the center of this unit. Additional access is available from the Missouri River on the northeast, Woodhawk Trail on the west, and Power Plant Ferry Road and DeMars Road on the south and east.

LIVESTOCK GRAZING

No new range projects are presently proposed. There are 11 reservoirs, 3.5 miles of fence, and two vehicle ways totaling 1.5 miles in this WSA. Of the 11 reservoirs, several are in poor condition and will require extensive maintenance or replacement in the near future. The WMP allows for construction of water developments in a manner least damaging to wilderness qualities. As reservoir sites in this WSA are limited by terrain and soils, there is likely to be long-term conflict involved in the location and construction of water projects. Other than potential problems with water projects, low impacts on livestock facility construction are expected.

The primary operator would have very limited use of the two vehicle ways, both of which access reservoirs. Routine checking of facilities and livestock would be allowed only on foot or horseback. Vehicles would be allowed to bring equipment or supplies for reservoir maintenance.

Livestock frequently bog in reservoirs in the allotment. Vehicle use on existing ways would be allowed to rescue them in a timely manner. The operator checks the reservoirs for bogged stock with an airplane, which is allowed in the WMP.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a high probability of finding natural gas in this unit. All but 633 acres of this WSA are leased for oil and gas. Approximately 3.3% of the acreage in this unit is included in pre-FLPMA oil and gas leases and 59.2% is included in post-FLPMA leases. Another 30% is presently in oil and gas simultaneous leases, awaiting assignment by lottery (see Figure 3.17).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease) there would be no impact to the minerals industry.

The rough topography and relatively small size of this unit make it unlikely that post-FLPMA leases could be developed without damaging wilderness values. With approximately 90% of the acreage in the unit included in post-FLPMA leases or in pending leases which will carry wilderness protection stipulations when issued, there is potential for major loss of opportunity to explore for natural gas.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

Although the WSA is part of the Lewistown Coal Field, the quality of coal in the unit is so low as to not be commercially valuable.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in potential increased expenses of approximately $85 and about 20 additional hours of labor annually. Potential loss in loan value for long-term ranch loans could be as much as $88,130, depending on the lender. Two operators have permits in this area. The major operator, who has 90% of the AUMs in the WSA would incur most of the increased expenses and reduced loan value.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

Wilderness designation would result in enhancement, protection and preservation of wilderness characteristics on approximately 8,100 acres. The unit has good primitive recreation opportunities but presently receives only vehicle-based hunting use and shoreline camping associated with river floats.

High quality solitude is available within the two major drainages. However, most use would initiate from the cherry-stemmed road in the center of the WSA. Vehicle traffic on the cherry-stemmed road would be a significant, if periodic, effect on the solitude of the surrounding area. As this road is located on a major ridgeline, both motorized and non-motorized users would be channeled to the center of this small WSA. The preponderance of reservoirs in the southern third of the WSA tend to adversely influence natural values. The area along the east and south edge of the WSA is adversely affected by farming operations just across the boundary. As the drainages open to the river in this portion of the unit, these operations would be periodically significant impacts to solitude.

The unit's interesting historical background and high scenic value are its primary supplemental values to wilderness designation.

MANAGEABILITY IMPACTS

The existing valid rights in the area are livestock grazing and mineral leases. The grazing permits will have a moderate impact as there will likely be conflict stemming from a wilderness designation with the affected permittee. Permittee use of motorized vehicles for facility maintenance or project development would be a periodic impact on wilderness values.

A total of 3.3% of the acreage in this WSA is included in pre-FLPMA leases. Those leased areas provide a slight wilderness management problem because such leases can be explored and developed even if such activity impairs wilderness values.

The overall pattern of landownership creates both benefits and disadvantages to the wilderness manageability of the Woodhawk unit. Farmed private land lies adjacent to the area on the east and south, and activity around the privately-owned river bottom areas effects wilderness values in portions of WSA. Development and use of these lands are outside the jurisdiction of the Federal Government. The northern and western portions of the WSA are adjacent to the Missouri River and other public lands that are primarily undeveloped and buffer the area from outside influences.

The area has excellent public access via both the Woodhawk Trail to the west, and the Missouri River along the north and east borders.

In addition to providing access, the Missouri River is a supplemental value to the area. It's a source of national interest in the area and its legislative protection guarantees the area will retain its wild characteristics.

WOODHAWK

No Wilderness Alternative

RECREATION—WILDLIFE
LIVESTOCK GRAZING—MINERALS
SOCIAL AND ECONOMIC CONDITIONS . . .
SEE GENERAL IMPACTS

WILDERNESS

Selection of the No Wilderness Alternative would mean the loss of wilderness protection of 8,100 acres of public land. Under this alternative, the entire area would likely retain its natural character, at least in the short term. Probable range management actions would have little effect on wilderness values.

Due largely to the probable existence of natural gas and/or oil underlying the area, there is potential for exploration activities in the future. Impacts such as access roads, pipelines and gas or oil storage areas are possible. These could adversely affect natural values.

Approximately 42.9% of the land included in the Woodhawk WSA is in the UMWSR. These lands are legislatively protected to preserve natural quality. Within 1/4 mile of the river, lands in the "Wild" designated segments are closed to oil and gas development. Lands in the "Scenic" segment are protected to preserve scenic quality and to prevent unnecessary or undue environmental damage. Until regulations are issued on the mineral leasing of wild and scenic lands, expired leases are not being re-issued in the river corridor. This reduces the potential for damage associated with exploration and development, at least in the short term. "Wild" and "Scenic" river designation to a large part ensures long-term protection of natural values which would otherwise be foregone in those portions of the WSA included in the UMWSR.

The existing MFP does not identify any specific activities in the Woodhawk WSA that would impair wilderness values.

COW CREEK

All Wilderness Alternative

RECREATION

Wilderness designation would close 34,500 acres to motorized recreation activity. Some vehicle dependent individuals, especially the elderly and the handicapped would be restricted from using the 24.25 miles of primitive vehicle ways, but would be able to use the five cherry-stemmed roads that access major portions of the unit. The majority of the unit is inaccessible to motorized vehicles.

WILDLIFE

Wilderness designation would close 27 vehicle ways, totaling approximately 24.25 miles. However, five cherry-stemmed roads, totaling approximately 11.0 miles will remain open, allowing access to portions of this unit. The elimination of vehicle use over large areas could discourage hunting. Less hunting and harvest of mule deer could result in a small population increase and limit the effectiveness of hunting as a game management tool.

LIVESTOCK GRAZING

The potential impact to range development construction and maintenance is considered moderate. Screening is generally good and several water developments have recently been constructed in the Cabin Creek Allotment under IMP constraints. There are 11 additional water developments and 2 miles of fence planned. Twenty-four water developments and 17.5 miles of fence are presently found in the unit. There has been a potential need for sagebrush control identified in some areas of the WSA. The management policy does not allow for sagebrush removal.

The operators would have very restricted use of 27 vehicle ways totaling 24.25 miles. Vehicles would not be allowed for routine checking of livestock or facilities. An additional cost to operators could occur if they were required to ride horses or walk into the wilderness area.

Regular use is made of the vehicle ways during the breeding season (6/1-7/15). Operators could bring bulls into an area for breeding but horses would have to be used for herding the cows.

One of the operators uses a motorcycle for keeping cows grouped with the bulls. This would not be allowed if the unit becomes wilderness. After freeze-up, one of the operators uses the reservoir access routes daily to break ice on waterholes (his licensed use is until 12/31). Vehicles could be used for this purpose.

One of the operators has sheep, in a neighboring pasture, and is concerned that predation will increase with wilderness designation since coyotes are currently hunted with snowmobiles in the WSA and snowmobiles would not be allowed in a wilderness. If coyotes do become a predator problem the WMP provides for control in a manner that will eliminate the problem.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a high probability of finding natural gas in this unit. All of the WSA is leased for oil and gas. Approximately 63.9% of the acreage in this unit is included in pre-FLPMA leases (see Figure 3.18).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease) there would be no impact to the minerals industry.

The location of the post-FLPMA leases in some of the roughest portions of the unit would probably mean stringent restriction of exploration activities in post-FLPMA leases to protect wilderness values. As over 25% of the unit is included in post-FLPMA leases, there is potential for significant loss of opportunity to explore for natural gas.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness under present laws. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

Coal and bentonite are present but the quality is too poor to merit commercial interest. No conflict should arise with the coal resources.

Claims have been filed on the possibly diamond-bearing formations in this WSA. Discovery of marketable diamonds would result in conflicts with wilderness. BLM could condition access to mining operations to limit impact on the wilderness resource.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in increased expenses of approximately $1,165 and about 310 additional hours of labor annually. The potential loss in loan values for long-term ranch loans could be as much as $356,297, depending on the lender. Seven operators and one grazing association utilize the WSA. Three of these operators and the grazing association have more than 250 AUMs. The increased expenses would be split among the various operators and may be higher than estimated because of the many operations involved. Any restrictions on new water development construction affecting livestock distribution could inhibit attempts to increase conception rates which have been historically low in this WSA.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

The Cow Creek Unit is the second largest in this study. Its size provides significant positive benefits. Abundant opportunities exist for outstanding solitude. The Cabin Creek, Winter Creek and Bull Creek drainages are rugged and heavily timbered in some spots. In areas along the northern and eastern sides of the WSA, and along ridges accessed by cherry-stemmed roads, the quality of solitude is significantly reduced. However, solitude and excellent opportunities for primitive recreation are generally available throughout the unit.

The more important special features of the unit include excellent scenery and cultural values. There are areas near the unit's center that contain particularly outstanding scenery especially the Horse Thief Canyon and the Bull Creek and Winter Creek drainages.

MANAGEABILITY IMPACTS

Manageability conflicts could occur with selection of this alternative. The north boundary follows a number of parallel drainages. It is not a clear physiographic boundary and can not be readily identified on the ground.

Five cherry-stemmed roads create serious management problems. They enter the unit for a distance of 1 to 3.5 miles. The location of these roads (see Figure 3.5) are such that unrestricted vehicle use would impact solitude opportunities through much of the WSA.

The WSA contains two Montana State sections used primarily for livestock grazing. Other uses such as mineral development are not expected but possible. The livestock grazing is compatible with wilderness designation while extensive mineral development is not. If the sections are developed in the future, it would have a significant negative effect on the area's wilderness values. There is a potential conflict because access to these sections must be provided. These sections should be acquired, if possible, and included as part of the wilderness if the unit is designated.

There are two rights-of-way in the unit. The diversion dam in T. 24 N., R. 23 E., Sec. 5, affects only a small portion of the unit. The power right-of-way lies on the southern border. Since the power source was torn down (at Power Plant Ferry) the right-of-way is no longer used and its impact to wilderness is insignificant.

A power site classification involves 552 acres of the unit. No projects are planned or under construction.

The unit has nine lode mining claims located on possible diamond-bearing formations. The potential that these claims are diamond-bearing is low (Hearn 1977, BLM 1982) and the cost of extracting them is high. Therefore, it is not expected that the claims will be mined. If these claims did prove to be economically feasible to mine, they could be patented creating private inholdings that would require vehicle access.

The entire unit is leased for oil/gas exploration. Over 63% of the unit lies in pre-FLPMA leases (see Figure 3.18). Since these leases can be explored and developed even if they degrade wilderness values and more exploration is expected, they create short-term wilderness manageability problems. Given the large size of the unit and its excellent topographic and vegetative screening, a certain amount of exploration could be accommodated before wilderness values were impacted.

Most of the unit is surrounded by undeveloped public lands which buffer many of the outside impacts. Portions of the unit lie adjacent to private lands which are either farmed or ranched. These activities impact areas on the periphery of the unit, particularly along ridgetops in the northern and eastern part of the WSA.

Access is available from two county roads and the Missouri River. Even though the roads are primitive and seasonal, they provide access into different portions of the unit. Remaining access is controlled by private landowners.

The UMWSR would be an advantage to the unit because the river classification demonstrates the national importance and the legislative protection insures the wild character of the corridor.

COW CREEK

Partial Wilderness Alternative 1

RECREATION

Selection of this alternative would result in the designation of 21,500 acres as wilderness. With this alternative, four of the five cherry-stemmed roads would no longer be inside the unit's boundaries. This diminishes access into the unit for the handicapped and elderly as well as for other users. However, the remaining cherry-stemmed road and the Winter Ridge Road gives vehicle-based visitors good access into some of the most scenic portions of the unit.

WILDLIFE

The Partial Wilderness Alternative would close 11 vehicle ways, totaling approximately 11.75 miles. One cherry-stemmed road, approximately 3.5 miles, would remain open allowing access to a large portion of this unit. The elimination of vehicle use over less area would cause less impact on hunting and harvest of game and any change in population levels will be minimal.

LIVESTOCK GRAZING

The Partial Wilderness Alternative would significantly reduce the impact to livestock grazing operations. Eleven water developments, 13 miles of fence, and 11 vehicle ways totaling 11.75 miles are located within the area included in this alternative. The types of impacts would be the same as with All Wilderness Alternative but to a lesser degree.

MINERALS

There would be less potential for conflict with the minerals industry as approximately 76% of the acreage containing post-FLPMA leases would be excluded. Three of nine mining claims would be outside the area included in this alternative. Impacts on the minerals industry because of remaining post-FLPMA leases and mining claims would be the same as those described in the All Wilderness Alternative.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

Selection of this alternative would reduce the potential expense of substitution of horses for casual vehicle use to $564 and about 150 additional hours of labor annually. Potential loss in loan value for long-term ranch loans would be reduced but could still be as much as $225,361, depending on the lender. These potential impacts would be shared by three operators.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative would result in a relatively large unit (21,590 acres). Except for the area adjacent to the cherry-stemmed road in T. 24 N., R. 22 E., Sections 14, 15, 22 and 29 the area offers outstanding opportunities for solitude. Diverse and excellent opportunities for primitive recreation are available. This Partial Wilderness Alternative eliminates a substantial number of impacts on natural characteristics and solitude opportunities. It eliminates four of the five cherry-stemmed roads, 12.5 miles of vehicle ways, a powerline, diversion dam and 13 reservoirs. The remaining area includes some of the most rugged and scenic portions of the WSA.

MANAGEABILITY IMPACTS

This alternative eliminates one of two state section inholdings. If this alternative is selected by Congress, there would be provisions for acquisition of the state section to include it in the wilderness area.

Three lode mining claims and associated management conflicts would be removed from the WSA with this alternative. It is not expected that the six claims remaining in this alternative will be mined, but if they were, and proved to be economically feasible, patent could be requested and granted creating private inholdings that would require vehicle access.

Oil and gas leaseholders would have valid existing rights to explore and develop within pre-FLPMA leases covering 81.2% of the acreage in this alternative. As activities on these leases can damage wilderness quality and more exploration is expected, the leases create a significant short-term management problem.

Much of the area within this alternative is surrounded by public land. These lands have similar wild characteristics as the WSA and screen many of the offsite impacts on adjacent private lands. This alternative eliminates most of the conflicts from offsite impacts along the northern portion of this WSA.

The Partial Wilderness Alternative does not change access opportunities from the All Wilderness Alternative.

Values derived from the unit's association with the UMWSR would be the same as the All Wilderness Alternative.

COW CREEK

No Wilderness Alternative

RECREATION—WILDLIFE LIVESTOCK GRAZING—MINERALS SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

Non-designation would mean the loss of wilderness protection for 34,050 acres.

Changes to natural features or reduction in opportunities for solitude or non-motorized recreation would probably come slowly, even without wilderness designation.

Vehicle use would continue unrestricted. There would be a continuing impact on the quality of solitude available in the Cow Creek WSA. There are 11 water projects and 2 miles of fence proposed in the WSA which are consistent with the MFP. Some of these could have a negative impact on naturalness. With wilderness designation most would be constructed but only in a location and manner least impairing to wilderness. This requirement would not be necessary with this alternative.

Portions of the area have current mining claims. Extensive earth movement from mining operations could mean a significant loss of wilderness values. However, the cost of extracting diamonds from the claims would be high and the potential for a discovery is low. Therefore, it is not probable that the claims will be mined.

Post-FLPMA leases would not be constrained by wilderness. Exploring the leases could mean a significant loss of wilderness values, especially if the leases are found to be productive. Long-term access for activities associated with gathering gas or oil would detract from solitude and naturalness. In the short term, the right to explore and develop pre-FLPMA leases could impair wilderness values. This could occur whether or not this WSA were designated as wilderness.

In this WSA, the UMWSR will provide protection on only 5.9% of the area. Within ¼ mile of the river of this "Wild" designated segment, lands are closed to oil and gas development and expired leases will not be re-issued. With such minimal acreage, however, wild and scenic river protection would be only a minor factor in maintaining natural values.

ANTELOPE CREEK

All Wilderness Alternative

RECREATION

Wilderness designation would close 12,350 acres to motorized recreational activity. Vehicle dependent recreationists would still be able to use the internal boundary road which bisects the unit and provides access to the most scenic portions of the unit. Much of the unit is inaccessible to motor vehicle use.

WILDLIFE

The All Wilderness Alternative would close 14 vehicle ways totaling approximately 11 miles and eliminate off-road travel. Access for hunting would be available from the road that bisects the unit, the Power Plant Ferry Road on the west and north and the Missouri River on the southwest.

The overall affect of combining this WSA with the adjoining CMR wilderness proposal (now before Congress) would create a large more isolated roadless block with limited hunting access. There is a possibility that optimum harvests of game may not be achieved.

LIVESTOCK GRAZING

A low impact to construction and maintenance is expected due to the relatively small number of planned and existing developments. Four reservoirs are planned and two exist in the unit.

The operators would have very restricted use of 14 vehicle ways totaling 11 miles. These are ridge roads that are used regularly for livestock observation and access for gathering and moving livestock. Vehicles will not be allowed for this routine observation of livestock and facilities. Costs to the operators could increase where horse or foot travel is required to check livestock.

Frequent use of these routes is made during the breeding season and daily after freeze-up to break ice on water holes AMEC (1982). Vehicles would be allowed on existing ways to deliver bulls during the breeding season as well as to access reservoirs to break ice as the need arises.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a high probability of finding natural gas in this unit. There are 2,270 unleased acres in the unit, roughly 17% of the total area. Approximately 27% of the acreage in the unit is included in pre-FLPMA oil and gas leases and 45.6% is included in post-FLPMA leases (see Figure 3.19).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease) there would be no impact to the minerals industry. The rough topography and open ridgelines would probably mean stringent restriction of activities in post-FLPMA leases to protect wilderness. With approximately three-quarters of the unit in post-FLPMA leases, unleased, or pending leases (the latter two which would carry post-FLPMA wilderness protection stipulations, if leased) there is potential for significant loss of opportunity to explore for natural gas.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

Coal and bentonite reserves are present but in much too poor quality and low quantity to offer real commercial potential.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in increased expenses of approximately $530 and about 140 additional hours of labor annually. Two operators and one grazing association have permits in this area. One operator has the majority of the AUMs, but as this is a common allotment, all operators might use the vehicle ways. Thus, expenses may be higher than estimated. Potential loss in loan value for long-term ranch loans could be as much as $107,015, depending on the lender.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

The Antelope Creek unit contains areas of outstanding solitude. Its steep and dissected topography and patches of conifers help to ensure the visitor's isolation from the works of man. In areas near the bisecting road, along the eastern side adjacent to U.S. Highway 191 and near the unit's northern and western boundary solitude opportunities are significantly reduced by periodic vehicle disruptions.

Although opportunities for primitive recreation are not outstanding the ease of access, excellent scenery, abundance of wildlife and proximity to the UMWSR provide diverse recreational opportunities.

The most important special feature of the unit is attractive scenery. Wilderness designation would help protect this natural setting from manmade disturbances.

The unit borders the Antelope Creek Wilderness Study Area in the CMR. This unit is administratively-endorsed and is now pending before Congress. Wilderness designation would enhance the wilderness characteristics of both study areas, providing far greater opportunities for primitive recreation and solitude, as well as diminishing the overall effect of offsite influences.

MANAGEABILITY IMPACTS

There would be potential for manageability problems. Boundaries along much of the northern and eastern parts of the unit are based on physiographic lines or ownership boundaries and are not identifiable on the ground.

The two privately-owned parcels and one state-owned tract along the Missouri River bordering the unit on the south are outside Federal jurisdiction. No additional development of these lands is anticipated, however, any major development would detract from wilderness values in the unit.

Approximately 500 acres of the unit are classified as a power site withdrawal. No projects are planned or are under construction. A power line right-of-way lies on the western and northwestern borders. Since the power source was torn down (at Power Plant Ferry), the right-of-way is no longer used and its impact to wilderness is insignificant.

Approximately 27% of the acreage is contained in pre-FLPMA oil and gas leases. Since these leases can be explored and developed, even if they degrade wilderness values, they create a wilderness manageability problem. However, most of the pre-FLPMA leases are located in the center of the unit, where excellent topography and vegetative screening would allow some exploration without major impairment of wilderness values.

The northern and western boundaries are surrounded by undeveloped public lands. These lands have very similar wilderness characteristics and serve to augment the primitive values of the Antelope Creek WSA. The private land bordering the unit to the north and east is primarily used for livestock grazing. Unless these lands are developed, they have a very minimal impact on the unit. U.S. Highway 191 parallels much of the eastern boundary. Sights and sounds of the highway penetrate the eastern border, limiting opportunities for solitude in that portion. The road that bisects the area into two separate roadless blocks is a significant management problem. This road allows vehicle use into the center of the WSA.

Access into the unit is available from a county road on the western side and the Missouri River. Even though the road is primitive and seasonal, it provides access into the western portion of the unit. The remaining access from the northern side is controlled by private landowners. This creates some long-term problems for visitor use of the area. Access by foot is available from the south through the CMR.

The UMWSR would be an advantage to the unit because the river classification demonstrates the national importance of this area and the legislative protection insures the wild character of the corridor.

ANTELOPE CREEK

Partial Wilderness Alternative 1

RECREATION

Selection of this alternative would close 9,600 acres to motorized recreational activity. Impacts would be generally the same as for the All Wilderness Alternative.

WILDLIFE

This alternative would close 11 vehicle ways totaling approximately 9.75 miles, and eliminate off-road vehicle travel. Impacts on hunting as a game management tool would be the same as the All Wilderness Alternative.

LIVESTOCK GRAZING

With this alternative, there is a slight reduction of impact to the ranch operator. The existing water sources are outside the alternative boundary. Vehicle use would be restricted on 9.75 miles of vehicle way within the wilderness. The impact to future construction and vehicle use would be nearly the same as the All Wilderness Alternative.

MINERALS

This alternative would have less impact to the minerals industry then the All Wilderness Alternative. All of the pre-FLPMA leases would remain in this alternative but 47% of the post-FLPMA leases would be freed from wilderness constraints. There would be less loss of opportunity to explore and/or develop oil and gas leases with this alternative.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

This Partial Wilderness Alternative would reduce the potential expense of substitution of horses for casual vehicle use to $490 and 130 additional hours of labor annually. Potential loss in loan value for long-term loans could be as much as $83,094, depending on the lender. Impact would be distributed among the two operators and one grazing association.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative retains the areas with the most outstanding wilderness values while eliminating those lands nearest U.S. Highway 191; the source of periodic disruptions to solitude.

Opportunities for primitive recreation are similar to those in the All Wilderness Alternative.

MANAGEABILITY IMPACTS

As there are no pre-FLPMA leases eliminated with this alternative conflicts to wilderness manageability would be the same as those described in the All Wilderness Alternative.

A key manageability impact caused by the bisecting road would be eliminated. This road would become the eastern boundary in this alternative. While still allowing vehicle access, selection of this alternative would eliminate the possibility of managing a roaded wilderness area.

ANTELOPE CREEK

Partial Wilderness Alternative 2

RECREATION

Selection of this alternative would close 2,750 acres to motorized recreational activity. Impacts on recreation would be minimal.

WILDLIFE

Selection of this alternative would close three vehicle ways totaling approximately 1.25 miles and eliminate off-road travel. The available access to the WSA would allow continued use of this area for hunting and harvest of game. There would be little or no impact on the use of game harvest as a wildlife management tool.

LIVESTOCK GRAZING

This alternative would include two reservoirs and only .75 mile of vehicle way. The impact to grazing management would be very low.

MINERALS

The alternative would reduce the short-term impacts on the mineral industry's ability to explore and develop oil and natural gas, as it would remove areas containing 53% of the post-FLPMA leases.

Long-term impacts to the minerals industry if the unit were designated would be the same as described in the All Wilderness Alternative but only for fewer acres.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

Since there is less than one mile of vehicle way in this partial wilderness alternative, the expense of substituting horse for casual vehicle use is almost eliminated. The potential additional expense is decreased to $35 and 10 additional hours of labor annually. Potential loss in ranch loan value for long-term loans could be as much as $23,921, depending on the lender.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative is a tack-on to the CMR's Antelope Creek Wilderness Study Area. It is doubtful that this parcel contains the outstanding wilderness quality to significantly enhance opportunities for outstanding solitude or primitive recreation.

Even though the area is topographically rough, its small size and its proximity to U.S. Highway 191 on the east boundary, offers little enhancement to the solitude opportunities now available in the CMR.

Opportunities for primitive forms of recreation are limited and not particularly outstanding. There is some good scenery in this tract but it is not spectacular and does not augment the scenery in the CMR study area.

MANAGEABILITY IMPACTS

As there are no pre-FLPMA leases included in this alternative, problems associated with valid existing rights to explore and develop these leases would be eliminated.

This alternative is surrounded by private lands on the east and undeveloped public lands elsewhere. The undeveloped public land has very similar wilderness characteristics and acts to buffer many offsite impacts. The private land is primarily used for livestock grazing and has a primitive appearance. However, any further development of adjacent private lands would be outside the BLM's jurisdiction.

ANTELOPE CREEK

No Wilderness Alternative

RECREATION—WILDLIFE LIVESTOCK GRAZING—MINERALS SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

This alternative would mean the loss of wilderness protection on 12,350 acres. Changes to natural features or reduction in opportunities to solitude would probably come slowly even without wilderness designation.

Post-FLPMA leases have no wilderness constraints. Exploration and development of productive leases could mean a loss of wilderness values. Long-term access to the well and activities associated with gathering oil or gas would detract from naturalness and opportunities for solitude.

Current grazing operations are nearly compatible with wilderness. However, vehicle use would continue unrestricted. This would create a continuing impact on the quality of solitude available in the Antelope Creek area.

There are four reservoirs proposed in the WSA which are consistent with the MFP. Some of these would have a negative impact on naturalness. Most would be constructed anyway, but only in a manner and location least impairing to wilderness. This requirement would not be necessary with selection of this alternative.

Approximately 35.4% of this WSA is within the UMWSR. Lands in this "Scenic" river segment are legislatively protected to prevent unnecessary or undue environmental damage. In addition, until regulations are issued on the mineral leasing of lands in the wild and scenic management corridor, expired leases are not being re-issued. This reduces the potential for damage associated with exploration and development, at least in the short term.

As Antelope Creek contains only "Scenic" designated lands which provide some, but less protection than would a "Wild" designation, some opportunities for protection for the WSA lands included in the river corridor would be foregone with the No Wilderness Alternative.

BRIDGE COULEE

All Wilderness Alternative

RECREATION

Wilderness designation would close 5,900 acres to motorized recreational activity. The overall effect of road closure is limited by the low use of the area for recreational activities.

WILDLIFE

Harvest of game as a management tool would not be effected. Wilderness designation would close four vehicle ways totaling approximately 3 miles and eliminate off-road travel. However, access for hunting is available from the county road on the west, Bridge Ridge Road on the south and Smith Ridge Road on the north side of this unit.

LIVESTOCK GRAZING

A moderate to high impact to grazing management could result due to restrictions on range developments in this WSA. Even though good screening is available, a well and 13,250 foot pipeline planned for the Sandage Coulee Allotment may be difficult to construct and maintain in a manner that would not degrade wilderness quality. Four water developments and 4.75 miles of fence are currently found in the WSA. Stock water is very limited at present; often the area can only be grazed in the spring due to water availability. Conception rates are poor at present. The planned pipeline and cross fencing would probably improve conception rates AMEC (1982).

The operators would have very limited use of 3 miles of vehicle way. Vehicle use for routine observation of livestock and facilities would not be allowed. Operating costs would increase if operators used horses or walked into the area for observation purposes.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated as low by BLM geologists, while there is a moderate probability of finding natural gas in this unit. A total of 87.6% of the acreage in this WSA is included in post-FLPMA oil and gas leases. The remainder of the unit is in oil and gas simultaneously awaiting assignment by lottery. These leases will be post-FLPMA when issued (see Figure 3.20).

Since there would be short-term stringent restrictions on development of these leases, if the unit were designated, there is a potential conflict with the minerals industry.

Under present laws a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the opportunity to explore and develop oil and gas reserves.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in increased expenses of approximately $145 and 40 additional hours of labor annually. The potential loss in ranch loan values for long-term loans could be as much as $70,504, depending on the lender. Two operators have permits in this area; one operator has about 90% of the AUMs but both might use the vehicle ways. Any restrictions on new water development construction affecting livestock distribution could inhibit attempts to increase conception rates which have been historically low in this WSA.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

Wilderness designation would result in enhancement, protection and preservation of wilderness characteristics on approximately 5,900 acres. Bridge Coulee's size makes it one of the smaller units in this study and is a significant disadvantage in relation to its wilderness characteristics. The acreage is inadequate to lessen the impact of major offsite influences on solitude and does not augment primitive recreation opportunities. There is virtually no present non-motorized recreational use of this area. The landform and layout of the unit is such that offsite noise and views penetrate deeply into the unit and visitors are channeled into drainage bottoms and ridgetops. The entire WSA is surrounded by roads.

The county roads on the north, east and west sides receive regular year-round use. Traffic is readily visible from many high points in the WSA. An unevaluated dinosaur fossil resource and the unit's scenery offer the only known supplemental values. This WSA would add little quality or ecotype diversity to the NWPS.

MANAGEABILITY IMPACTS

The grazing permits create a moderate impact as there will likely be conflict stemming from a wilderness designation with the affected permittees. Permitholders use of motorized vehicles for facility maintenance or project development would be a periodic impact on wilderness values.

There would be no impact on wilderness manageability from oil and gas development since the unit contains only post-FLPMA leases. Any work approved in these leases would be regulated so as to not impair wilderness values.

Good public access is available on the county roads which skirt the unit on the east, north and west. While providing access, the location of these roads reduce the effective area available for solitude and affect the ability to control vehicle use in and around the area.

The overall land pattern has a negative impact on wilderness suitability because the privately-owned lands, especially to the west, are the source of much offsite disruption and their future use is outside the jurisdiction of the BLM.

BRIDGE COULEE

No Wilderness Alternative

RECREATION—WILDLIFE LIVESTOCK GRAZING—MINERALS SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

Selection of this alternative would mean the loss of wilderness protection to 5,900 acres of public land. Under this alternative, the entire area would likely retain much of its natural character. Probable range management actions would have little effect on wilderness values.

Due to the possible existence of natural gas and/or oil underlying the area, there is a slight potential for exploration activities in the future. Impacts such as access roads, pipelines and gas or oil storage areas are possible. These could adversely affect natural values.

In the short run, the existing MFP does not identify any specific activities in Bridge Coulee WSA which would impair wilderness values.

MUSSELSHELL BREAKS

All Wilderness Alternative

RECREATION

Wilderness designation would result in the closure of 8,650 acres of land to motorized recreational activity. The overall effect of road closure is limited by the low use of the area for recreational activities.

WILDLIFE

The available access to the WSA would allow continued use of this area for hunting and harvest of game at or near existing levels. Wilderness designation would close six vehicle ways totaling approximately 7.2 miles and would eliminate off-road travel. However, access is available from the Musselshell River on the west, Haley Ridge Road on the north, a county road on the east and Williams Ridge Road on the south.

LIVESTOCK GRAZING

A moderate impact to grazing management could result due to restrictions on range developments in this WSA. Even though the unit is well screened by forest vegetation it may be difficult to construct and maintain the planned well and 10,560 foot pipeline in a nonimpairing manner. Two reservoirs are also planned. There are two existing reservoirs and 6.9 miles of fence. Major maintenance on these facilities could be done with the use of vehicles.

Stock water is very limited in the WSA. New water sources could be constructed in wilderness, but their location and size must be built in the least impairing manner.

The operators would have reduced use of six vehicle ways totaling 7.5 miles. These are ridge roads used for livestock observation and access for livestock gathering and movement. Vehicles would not be allowed for routine checking of livestock and facilities. An increased cost could occur if the operators have to use horses or foot travel to get into the wilderness area.

MINERALS

The potential for discovering economically recoverable amounts of both oil and gas is rated moderate by BLM geologists. All but 123 acres of this WSA is leased for oil and gas. Approximately 5.8% of the acreage in this unit is included in pre-FLPMA oil and gas leases and 92.8% is included in post-FLPMA leases (see Figure 3.21).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease) there would be no impact to the minerals industry.

This WSA is small and relatively inaccessible. It would be difficult for the minerals industry to develop their post-FLPMA leases without damaging wilderness values. With nearly all the unit included in post-FLPMA leases, there is potential for loss of opportunity to explore for oil and gas.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

Because no other commercial quantities of recoverable minerals are present in this WSA, there are no significant negative impacts to the minerals industry.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use could result in increased expenses of approximately $360 and about 95 additional hours of labor annually. Potential loss to ranch loan values for long-term loans could be as much as $130,936, depending on the lender. Five operators have permits in this area. One operator has the majority of the AUMs but vehicle ways are distributed among all the allotments, therefore, spreading the potential additional cost.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

Wilderness designation would result in enhancement, protection and preservation of wilderness characteristics on approximately 8,650 acres. Although Musselshell Breaks' size provides for both solitude and primitive recreation opportunities, the upgraded vehicle way through the center of the unit significantly diminishes the naturalness of the area. Major offsite influences, such as travel on the adjacent county road and sights and sounds of farming operations restrict outstanding solitude opportunities to limited areas. No exemplary recreational opportunities exist within the unit and present use is limited to vehicle-based hunting. Supplemental features, include the potential for vertebrate fossils and typical Breaks scenery which is much less spectacular than in other WSAs in this study. This WSA would add little to the quality and diversity of the NWPS.

MANAGEABILITY IMPACTS

The existing valid rights in the area are livestock grazing and mineral leasing. The grazing permits have a moderate impact as there could be conflicts stemming from wilderness designation. Permittee use of motorized vehicles for facility maintenance or project development would be a periodic impact on wilderness values.

Only 5.8% of the oil and gas leases in the unit are pre-FLPMA. These leased areas can be explored and developed even if such activity degrades wilderness values. Because there is a very small acreage involved and because the pre-FLPMA leases are located on the fringes of the unit, exploration and development of these leases is not a significant management problem.

Good public access is available on the county roads which skirt the unit. The overall land pattern has a negative influence on wilderness suitability because of the adjacent privately-owned lands, especially to the west, which are the source of offsite disruption. Future use of these adjacent lands would be outside the jurisdiction of the BLM.

MUSSELSHELL BREAKS

No Wilderness Alternative

RECREATION—WILDLIFE LIVESTOCK GRAZING—MINERALS SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

Selection of this alternative would mean the loss of wilderness protection for 8,650 acres of public land. Under this alternative, the entire area would likely retain much of its natural character. Probable range management actions would have little effect on wilderness values.

Due largely to the possible existence of natural gas and/or oil underlying the area, there is some potential for exploration activities in the future. Impacts such as access roads, pipelines and gas or oil storage areas are possible. These could adversely affect natural values.

In the short term, the existing MFP does not identify any specific activities in Musselshell Breaks WSA which would impair wilderness values.

BILLY CREEK

All Wilderness Alternative

RECREATION

Wilderness designation would result in the closure of 3,450 acres of land to motorized recreational activity. Some vehicle dependent individuals, especially the elderly and the handicapped, would still be able to use the three roads which segment the unit. The overall effect of road closure is limited by the low use of the area for recreational activities.

WILDLIFE

The available access to the WSA would allow continued use of this area for hunting and harvest of game. Wilderness designation would close one vehicle way totaling approximately one mile and eliminate off-road travel. However, access is available from the three segmenting roads.

LIVESTOCK GRAZING

No new improvements are planned at this time. The operators would have reduced use of one vehicle way, 1.25 miles long. This is not a significant impact.

Four roads that form the boundaries of the segments that make up Billy Creek provide the major access for grazing management. These would all remain open.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a moderate probability of finding natural gas in this unit. All of the WSA is either leased or pending leases for oil and gas. Approximately 55.9% of the acreage in the unit is included in pre-FLPMA oil and gas leases and 17.5% is included in post-FLPMA leases (see Figure 3.22).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease) there would be no impacts to the minerals industry.

The small size and topography of the unit would preclude most onsite development of post-FLPMA leases. With a portion of the unit included in post-FLPMA leases, there is potential for some loss of opportunity to explore for natural gas.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in increased expenses of approximately $60 and about 15 additional hours of labor annually. The potential loss in ranch loan values for long-term loans could be as much as $39,029, depending on the lender. Three operators have permits in this area; one would incur most of these increased expenses.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

Wilderness designation would result in the preservation of wilderness values of 3,450 acres. The small size and roads that segment the unit into four parcels make the area unsuitable for wilderness on its own. Its potential benefit as a tack-on to the CMR's Billy Creek WSA is the only consideration.

The separate Segments A and B (see Figure 2.9), on the west end, are the most rugged and undeveloped areas. They are natural physiographic extensions of the Billy Creek drainage in the CMR study area. A key conflict arises from the two roads separating the parcels. They are both major impacts on naturalness and are located along the drainages that tie the CMR and BLM study areas together.

The two eastern parcels form an east-west ridge between the CMR study area to the north, and adjacent farmlands to the south. The terrain is more rolling and open than in the western end, and as such, is more prone to periodic disruptions of solitude caused by vehicle use on the segmenting roads. The two reservoirs and vehicle trails are obvious signs of man's works and limit apparent naturalness. There are farming operations and a county road immediately adjacent to the south. These offsite activities reduce the unit's suitability for wilderness.

There are limited areas with excellent solitude in the WSA, but primitive recreation opportunities are limited. These wilderness values would not significantly add to the quality and diversity of the CMR study area.

Supplemental features, limited to an unevaluated dinosaur fossil resource and typical Breaks scenery which do not materially add to the unit's wilderness values.

MANAGEABILITY IMPACTS

The existing valid rights in the area are livestock grazing and mineral leases. The grazing permits have a moderate impact as there will likely be conflict stemming from a wilderness designation. Permittee use of motorized vehicles for facility maintenance or project development would be a periodic impact on wilderness values.

Approximately 55.9% of the area contains pre-FLPMA oil and gas leases. These leased areas provide a significant management problem as they can be explored and developed even if such activity impairs wilderness values. The rest of the unit is under post-FLPMA leases. These leases would not impact wilderness values as no impairing activities would be allowed.

The overall land pattern has a moderate negative impact on wilderness suitability both because lands to the south, which are a source of much offsite influence on wilderness values, are outside federal jurisdiction and because access to the area is blocked by private lands. The addition of this tack-on to the CMR would add management problems not now present for CMR. The segmenting roads would remain a long-term management problem for the agency with management responsibility.

BILLY CREEK

Partial Wilderness Alternative 1

RECREATION

Selection of this alternative would result in the closure of 1,650 acres of land to motorized vehicles. As there are no vehicle ways in this tack-on, impacts would be limited to off-road vehicle use and would be minor.

WILDLIFE

No significant impacts.

LIVESTOCK GRAZING

No significant impacts.

MINERALS

This alternative contains only pre-FLPMA leases and should not create any impacts on mineral development.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

There are no vehicle ways located in this alternative, so no increased operator expense would occur. Two operators have permits in this alternative. Potential loss in long-term loan values for ranch loans would be as much as $6,295, depending on the lender.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

Selection of this alternative would result in enhancement, protection and preservation of wilderness characteristics on approximately 1,650 acres.

This segment is a physiographic extension of the Billy Creek drainage with the contiguous CMR study unit. Although the lands in this segment are rugged and scenic, the location of a road negates much of its value as a tack-on to the CMR study unit. The road follows the Billy Creek drainage which is the key natural feature linking this area to the CMR. The road's impact on naturalness and the fact that motorized vehicles could periodically limit opportunities for solitude negate benefits which would otherwise accrue from linking the two areas.

MANAGEABILITY IMPACTS

This alternative is blanketed 100% by pre-FLPMA oil and gas leases. These leases create a wilderness management problem as they have inherent valid existing rights to explore and develop even if the work damages wilderness values.

The southern boundary of the tack-on would be difficult to differentiate from the adjacent private lands and would create a management problem. The land south of Billy Creek is presently grazed and not developed, but this future use is outside BLM's jurisdiction.

BILLY CREEK

Partial Wilderness Alternative 2

RECREATION

Selection of this alternative would result in the closure of 550 acres of land to motorized vehicle activity. Designation of this small tack-on would have a very minimal effect on recreational use.

WILDLIFE

No significant impacts.

LIVESTOCK GRAZING

No significant impacts.

MINERALS

This alternative would be more favorable to the minerals industry than the All Wilderness Alternative. It removes 330 acres containing post-FLPMA leases and 920 acres to be leased through oil and gas simultaneous lottery to become post-FLPMA leases from potential development restrictions.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

Potential long-term ranch loan values could be reduced by as much as $18,885, depending on the lender. Two operators would be affected.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative would result in enhancement, protection and preservation of wilderness characteristics on approximately 550 acres. Opportunities for augmenting primitive recreation and solitude opportunities of the CMR study area are limited by this alternative's size and the presence of the two segmenting roads. These roads detract from naturalness and create the opportunity for periodic disruptions to solitude. This area would provide no significant enhancement to the CMR's East Seven Blackfoot study unit.

MANAGEABILITY IMPACTS

The acreage in the alternative contains 49.6% pre-FLPMA leases. Impacts are the same as described in the All Wilderness Alternative.

The irregular southern boundary between BLM and private lands is difficult to locate. These adjacent private lands are presently used for grazing and are undeveloped but their future use is outside BLM's jurisdiction.

BILLY CREEK

No Wilderness Alternative

RECREATION—LIVESTOCK GRAZING MINERALS—SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

This alternative would mean the loss of wilderness protection for 3,450 acres of public land. Under this alternative, the entire area would likely retain its natural character, at least in the short term. Probable range management actions would have little overall effect on wilderness values.

BLM estimates there is low to moderate potential for oil or gas reserves in this WSA. If a discovery is made impacts such as access roads, pipelines and gas or oil storage areas would be possible. These could adversely affect natural values.

In the short term, the existing MFP does not identify any specific activities in the Billy Creek WSA which would impair wilderness values.

SEVEN BLACKFOOT

All Wilderness Alternative

RECREATION

Wilderness designation would result in the closure of 20,250 acres to motorized recreational activity. Vehicle dependent individuals would still be able to use the segmenting roads for access to the interior of this WSA. The overall effect of road closure is limited by the low use of the area for recreational activities.

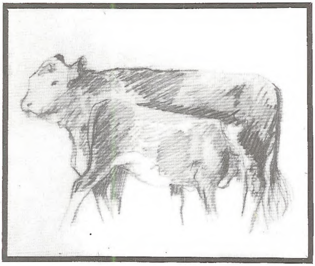
WILDLIFE

Wilderness designation will close 10 vehicle ways totaling approximately 11.25 miles and eliminate off-road travel. However, access is available from the Seven Blackfoot Trail and North Sawmill Creek Road which segment this unit. The available access would allow limited vehicle use of this area for hunting and game harvest. A slight increase in game population could occur because of the large block of roadless land that would be formed in conjunction with the contiguous CMR study unit.

LIVESTOCK GRAZING

The combination of excellent screening and few proposed projects in this WSA makes for low potential impact to range development construction and maintenance. One mile of fence, three reservoirs and one spring are proposed on the Seven Blackfoot (2371) Allotment and one reservoir is proposed on the Big Coulee (2319) Allotment. Sixteen water developments and 10.5 miles of fence are presently found in the WSA. Maintenance would be allowed on all existing facilities. Where vehicles or heavy equipment are necessary for repairs, they would be allowed.

The operators would have very restricted use of 10 vehicle ways totaling 11.25 miles. These trails are sometimes used for livestock observation and access for livestock gathering and movement. Vehicles would not be allowed for routine observation of livestock and facilities. The use of horses or foot travel is time consuming and would accrue some additional costs to the operators. In this rugged area, however, the most efficient management of livestock is often by horseback.



MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a moderate probability of finding natural gas in this unit. All of the WSA is either leased or pending leases for oil and gas. Approximately 21.3% of the acreage in this unit is included in pre-FLPMA oil and gas leases and 73.2% is included in post-FLPMA leases (see Figure 3.23).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease) there would be no impact to the minerals industry.

The WSA's rugged, heavily-eroded topography and fragile nature would require stringent safeguards to prevent degradation of wilderness values on post-FLPMA leases. In most cases access routes and onsite drilling would be disallowed. With nearly three-quarters of the unit in post-FLPMA leases, there is potential for major loss of opportunity to explore for natural gas.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

Coal and bentonite are present but none are found in commercial quantities.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in potential increased expenses of approximately $540 and about 145 additional hours of labor annually. The potential loss to ranch values for long-term loans could be as much as $195,145, depending on the lender. Ten operators have permits in this area; seven of these have less than 110 AUMs. Most of the increased expense would be incurred by the major operations. However, the increased expenses may be higher than estimated because of the many operations involved in the WSA.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

Wilderness designation would result in enhancement, protection and preservation of wilderness characteristics on approximately 20,250 acres. The size of this unit is a significant advantage to the quality of its primitive recreation and solitude opportunities. There is adequate land mass to provide a visitor a sense of isolation from the works of man. This is in spite of significant offsite influences from mechanized farming to the south, west and to some extent the eastern sides of the unit. Periodic traffic on the internal boundary roads would cause occasional disruption to solitude. Areas adjacent to the internal roads are not apparently natural. The topographical relief of the unit, its vegetative screening and its size ensure excellent solitude in some areas. Good opportunities exist for non-motorized recreation but the area presently has little or no such use. The scenery is a major supplemental feature augmenting wilderness values in the unit.

MANAGEABILITY IMPACTS

The existing valid rights in the area are livestock grazing and mineral leasing. The grazing permits have a moderate negative impact as there will likely be conflict stemming from a wilderness designation with the affected permittees.Permit holder use of motorized vehicles for facility maintenance or project development would be a periodic impact on wilderness values.

Approximately 21.3% of the acreage in this WSA contains pre-FLPMA leases. These leased areas provide a wilderness management problem as they can be explored and developed even if such activity degrades wilderness values.

Both state and privately-owned inholdings are a major negative impact to wilderness suitability. The landowners or, in the case of state-owned lands, the lessee's rights of access and freedom of action within these lands, pose a significant and continuing threat of impairment of wilderness values. The internally segmenting roads are a major disadvantage to management of this block of land as wilderness. The internal roads are a constant reminder of man's presence and create the potential for regular vehicle traffic.

The overall pattern of landownership also has a moderate negative impact on wilderness values. On the southern and western edge of the unit there are planted fields. Noises from machinery working in the fields periodically penetrate into the area. The BLM would have no control on when and how these impacts might occur. The only reasonable public access is along a narrow strip of public land that contacts the county road on the east side of the WSA.

The WSA is contiguous with two CMR study units on the north. Contiguity with the CMR wilderness study units is a consideration in the suitability of all or part of this WSA. Wilderness designation would increase the size of the wilderness area, providing greater opportunities for primitive recreation and solitude, and diminishing the overall effect of offsite influences.

SEVEN BLACKFOOT

Partial Wilderness Alternative 1

RECREATION

Selection of this alternative would close 1,160 acres to motorized vehicle activity. There are no significant advantages or disadvantages to recreation with this alternative.

WILDLIFE

This alternative would eliminate off-road travel. As terrain already restricts vehicle use in most of this small tract, wilderness would not significantly affect harvest of game.

LIVESTOCK GRAZING

With this alternative only two reservoirs and .25 mile of fence and no vehicle ways would remain within wilderness. There would be a very low impact to grazing management.

MINERALS

This alternative would have minimal impact on the minerals industry. It would recommend 14,480 acres containing post-FLPMA leases as non-suitable for wilderness. Approximately 840 acres in this alternative contain pre-FLPMA leases that would not restrict exploration in the short term.

The long-term impacts to the minerals industry, if the unit were designated, would be the same as described in the All Wilderness Alternative.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

There are no vehicle ways located in this Partial Wilderness Alternative so no increased expense would occur. Four operators have permits in this area. Potential loss in ranch loan values for long-term loans could be as much as $16,367, depending on the lender.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative would result in enhancement, protection and preservation of wilderness characteristics on approximately 1,160 acres. This subunit is located in some of the most dissected land in the Seven Blackfoot Study Area.

Offsite mechanized farming impacts on the west could periodically affect this unit but the rough topography screens the user from most of these influences. Although the subunit would not be manageable as wilderness on its own, its excellent topographic and vegetative screening materially add to the solitude and primitive recreation opportunities already available in CMR's West Seven Blackfoot study unit. The area comprises the physiographic extension of the Big Coulee Creek drainage which runs through the CMR study area and empties into Fort Peck Reservoir.

MANAGEABILITY IMPACTS

As the subunit includes neither state nor privately-owned inholdings, the impacts described in the All Wilderness Alternative would not occur. There would be little or no impact on grazing management.

Approximately 840 acres are included in pre-FLPMA oil and gas leases. The impacts to wilderness management would be the same as that described in the All Wilderness Alternative. Vehicle access to this small parcel would be controlled by private landowners. This would be a management problem if this access was restricted or eliminated. Access would be available from Fort Peck Reservoir through the CMR study area.

This alternative would eliminate the management conflicts associated with vehicle use on the internal segmenting roads as described in the All Wilderness Alternative.

SEVEN BLACKFOOT

Partial Wilderness Alternative 2

RECREATION

Selection of this alternative would result in the closure of 4,550 acres of land to motorized vehicle activity (see Segment B, Figure 2.10). This would be a minor impact in this rugged area where terrain already restricts most vehicle use. This tract would increase the opportunities for primitive non-motorized recreation presently available in the contiguous CMR study area.

WILDLIFE

Off-road vehicle use would be eliminated but rugged terrain already restricts most of this use. Wilderness designation would not significantly affect harvest of game. The combining of the partial wilderness alternatives with the adjoining CMR wilderness proposals would not significantly alter game harvest or wildlife populations.

LIVESTOCK GRAZING

With this alternative only two reservoirs, no fence and no vehicle ways would be within wilderness; impact to grazing management would be very low.

MINERALS

The oil and gas industry would be less impacted with this alternative than the All Wilderness Alternative. Approximately 12,290 acres containing post-FLPMA leases would be excluded from wilderness consideration. The remaining acreage in post-FLPMA leases in this segment is in extremely rugged terrain and would be difficult to explore without developing roads and disturbing the natural setting. There is a high probability that post-FLPMA leases could not be developed without damaging wilderness quality and work would not be allowed. Long-term impact to the minerals industry if the unit were designated would be the same as described in the All Wilderness Alternative.

SOCIAL AND ECONOMIC CONDITIONS

There are no vehicle ways located in this alternative so no increased expense would occur. Two operators have permits in this area. Potential loss in ranch loan values for long-term loans could be as much as $44,065, depending on the lender.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative is being considered because of its contiguity with CMR's East Seven Blackfoot study unit. Designation would result in enhancement, protection and preservation of wilderness characteristics on approximately 4,550 acres. This area is almost totally natural. Mechanized farming and vehicle use just outside the eastern boundary could impact the unit, but the steep topography screens the sights and sounds of most of these disturbances.

Excellent primitive recreation and solitude opportunities in this segment would enhance the existing wilderness values of the CMR's East Seven Blackfoot study unit. The north part of the BLM WSA contains the heads of five major drainages which run through CMR's study area and empty into Fort Peck Reservoir. The southern part of the subunit is composed of a single large drainage which contains excellent solitude opportunities and lends itself to hiking, nature study, photography and horseback riding. The spectacular scenery is an important supplemental value.

MANAGEABILITY IMPACTS

The overall land pattern is somewhat of a management concern in this unit as farmed areas and a road are adjacent to the unit at several points on the east side. Conversely, public access is assured along the county road on the east.

Approximately 1,035 acres include pre-FLPMA oil and gas leases which are included in this alternative. The impact of these leases on wilderness manageability would be the same as with the All Wilderness Alternative.

This alternative eliminates the management conflicts created by state and private inholdings as well as the internal segmenting roads.

SEVEN BLACKFOOT

Partial Wilderness Alternative 3

RECREATION

Selection of this alternative would result in the closure of 11,450 acres of land to motorized vehicle activity. Impacts would be the same as in the All Wilderness Alternative.

WILDLIFE

This alternative would close nine vehicle ways, totaling approximately 9.25 miles. However, access would be available from the north and east on the Seven Blackfoot Trail and from the north and west on the Sawmill Creek Road. Available access would allow continued use of this area for hunting and game harvest.

LIVESTOCK GRAZING

This alternative includes most of the existing developments: 10 reservoirs, eight vehicle ways totaling 8 miles and 10.25 miles of fence. The type and degree of impact would be similar to the All Wilderness Alternative.

MINERALS

The oil and gas industry would be less impacted with this alternative but would still be restricted in the short term on exploration and development of approximately 8,500 acres of post-FLPMA leases. The long-term impacts would be the same as those described in All Wilderness Alternative.

SOCIAL AND ECONOMIC CONDITIONS

RANCH RELATED ECONOMIC IMPACTS

This alternative would reduce the expense of substitution of horses for casual use to $395 and about 105 additional hours of labor annually. Seven operators have permits in this area. The major operators would incur most of the increased expense. Potential loss in ranch loan values for long-term loans could be as much as $110,792, depending on the lender.

WILDERNESS

EVALUATION OF WILDERNESS CHARACTERISTICS

This alternative would result in enhancement, protection and preservation of wilderness characteristics on approximately 11,450 acres. Even though more land area is included in this alternative than in the other partial alternatives, it is more vulnerable to the offsite intrusions that ring the perimeter. The drainage bottoms offer adequate isolation but ridgetops and sides are open to disruption from intensive farming, vehicle traffic, farm buildings and other nearby offsite influences. Primitive recreation opportunities are good but not outstanding. The scenery is a supplemental value.

MANAGEABILITY IMPACTS

Most of the potential conflicts from grazing management would occur in this segment. There are 10 reservoirs, 10.25 miles of fence and 8.25 miles of vehicle ways that would require periodic maintenance with motorized equipment. The existence of the state section in the center of the unit is a major disadvantage to wilderness suitability both because of the absence of Federal control over leaseholder activities and because of the need to provide access through public land to the state section. This inholding divides the unit in half and is a major management problem.

Somewhat less land is in pre-FLPMA lease status (17.4%) than in the All Wilderness Alternative (21.3%). Wilderness manageability conflicts caused by pre-FLPMA leases would be the same as in the All Wilderness Alternative.

SEVEN BLACKFOOT

No Wilderness Alternative

RECREATION—WILDLIFE LIVESTOCK GRAZING—MINERALS SOCIAL AND ECONOMIC CONOITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

This alternative would mean the loss of 20,250 acres of public land to wilderness protection. Under this alternative, the entire area would likely retain its natural character, at least in the short term. Probably range management actions would have little overall effect on wilderness values.

Due largely to the possible existence of natural gas and/or oil underlying the area, there is limited potential for exploration activities in the future. Impacts such as access roads, pipelines and oil or gas storage areas are possible and would adversely affect natural values.

In the short term, the existing MFP does not identify any specific activities in Seven Blackfoot which would impair wilderness values.

BURNT LODGE

All Wilderness Alternative

RECREATION

Wilderness designation would close 13,850 acres to motorized recreational activity. Vehicle dependent individuals would still be able to use the Plum Creek Road to the north which offers access and provides a scenic view of the northern portion of the unit. Limiting hunting access would create a conflict because of the heavy elk hunting pressure in this WSA.

WILDLIFE

The Montana Department of Fish, Wildlife and Parks (MDFWP) has been contacted on their concern regarding wilderness designation of this and other WSAs. In the case of Burnt Lodge, their biologists stated that "mere designation of a tract as wilderness does not automatically infer either benefit or detriment to wildlife," (Johnson 1981).

Wilderness designation will close 10 vehicle ways totaling approximately 13.6 miles and eliminate off-road travel. The only public access available is from Plum Creek Road on the north side. The limited access to the WSA could discourage hunter participation and harvest. Targets set by the state may not be met and game populations would increase. The MDFWP also indicated that loss of access to this area could create overpopulation of big game (Johnson 1981).

The combining of this WSA with the adjoining CMR wilderness proposal (now before Congress) would create a large block of roadless land and would compound problems of hunter use and game management.

LIVESTOCK GRAZING

A low impact to range management would occur with selection of this alternative. The only projects proposed are .75 mile of fence and four reservoirs in the Burnt Lodge (5667) Allotment. Four reservoirs and 6.25 miles of fence are presently found in the unit.

The operators would have reduced use of 10 vehicle ways totaling 13.6 miles. These are mainly ridge roads used occasionally for livestock observation and access for gathering and movement. Vehicles will not be allowed for this routine observation of livestock and facilities. Costs to the operators could increase if horses or foot travel are required to inspect the operations.

MINERALS

The potential for discovering recoverable amounts of oil is rated low by BLM geologists, while there is a moderate probability of finding natural gas in this unit. All of the WSA is leased for oil and gas. Approximately 3% of the acreage in this unit is included in pre-FLPMA oil and gas leases and 97% is included in post-FLPMA leases (see Figure 3.24).

Inherent in the pre-FLPMA lease is a valid existing right to explore for and develop reserves. In the short term (the life of the lease), there would be no impact to the minerals industry.

With almost all of the unit's acreage included in post-FLPMA leases, there is potential for major loss of opportunity to explore for natural gas. The unit's rough terrain, which limits easy access to most areas would also severely restrict the exploration for and development of oil and gas leases.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

Coal and bentonite are present but in such poor qualities and low quantities, that limited development would have limited impact on the minerals industry.

SOCIAL ANO ECONOMIC CONDITIONS

ATTITUDES TOWARD WILDERNESS DESIGNATION

Local attitudes appear to be less negative for this study area than for other WSAs. This was the only WSA in the Lewistown District that was not appealed.

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in potential increased expenses of approximately $660 and about 175 additional hours of labor annually. The potential loss in ranch loan values for long-term loans could be as much as $211,512, depending on the lender. Three operators have permits in this area. Two of these have almost 90% of the AUMs and would incur most of the increased expenses and reduced loan values.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

The Burnt Lodge Unit contains many areas where a visitor can find outstanding solitude. The area's size, dissected terrain and dense pockets of timber significantly enhance the feeling of solitude. Near the edge of the unit, especially to the southwest, the unit borders two ranch homesites. Because of the extremely rugged terrain, these sites are screened and not a major detriment to solitude opportunities. Opportunities for primitive recreation are of especially high quality in Burnt Lodge Unit. An established elk herd provides hunting opportunities not presently available in any other WSA in the study. The most important special feature of the unit is its excellent scenery. Wilderness designation would help protect this ecosystem from manmade disturbances.

This unit borders the CMR's Burnt Lodge Wilderness Study Unit. This WSA is administratively-endorsed and is now pending Congressional action. If both are designated wilderness, the large block will augment the overall opportunity for solitude and diverse outdoor recreation pursuits. The two areas are physiographically linked.

MANAGEABILITY IMPACTS

Lands to the west of the WSA are privately-owned. They are primarily used for livestock grazing and limited farming. Two homesites have just been constructed on the west edge of the WSA. No additional development of adjacent private lands is anticipated, however, if those parcels are extensively developed in the future, it would significantly affect the area's wilderness values. Two 640 acre parcels, one privately-owned and one state-owned, create a manageability problem in T. 24 N., R. 34 E., of this WSA if designated and should be acquired and included if the area is designated as wilderness. These parcels are extremely important for the long-term manageability of the unit.

The entire unit is permitted for livestock grazing. Wilderness designation is compatible with livestock grazing. No major range projects are proposed and potential conflicts are minimal.

Approximately 3% of this WSA is included in pre-FLPMA leases. Valid existing rights to explore these leases would not create a significant problem because of the limited area affected in the WSA and the lack of industry interest due to the low potential for discovery.

Nearly all the northern boundary is surrounded by private land. Most of this private land is used primarily for livestock grazing and retains its primitive appearance. Two new private homes recently built adjacent to the unit's borders locally affect wilderness characteristics. However, the management of most private land is compatible with wilderness. The remaining land is bordered by public land and the CMR. These areas are undeveloped and augment the primitive values of the Burnt Lodge WSA.

Access from the west and north sides is controlled by surrounding landowners. This creates some long-term problems for visitor use of the area. However, access by foot is available from the south through the CMR or along Timber Creek on the east.

BURNT LODGE

No Wilderness Alternative

RECREATION—LIVESTOCK GRAZING—MINERALS SOCIAL AND ECONOMIC CONDITIONS . . . SEE GENERAL IMPACTS

WILDERNESS

This alternative would mean the loss of wilderness protection of 13,850 acres to the wilderness preservation system.

There is little prospect for a loss of natural values. The current grazing operations are nearly compatible with wilderness, however, vehicle use would continue unrestricted. This would create a continuing but minor impact on the quality of solitude available in the Burnt Lodge WSA. There are four reservoirs and one fence proposed in the WSA which are consistent with the MFP. Proposed range improvements would have a very small impact on the area's naturalness.

Post-FLPMA leases would not be constrained by wilderness. Exploring the leases would mean a loss of wilderness values, especially if the lease is found productive. Long-term access to the well and activities associated with gathering gas or oil would detract from solitude and naturalness. Potential for reserves is only low to moderate.

TERRY BADLANDS

All Wilderness Alternative

RECREATION

Wilderness designation would result in the closure of 43,450 acres of land to motorized recreational activity. Some vehicle dependent individuals, especially the elderly and the handicapped would be prevented from use of the vehicle ways in the area. However, they would still be able to use the Calypso Trail which traverses much of the most scenic portions of the unit. Most of the unit is inaccessible to vehicles. Closure of the southern portion of the unit especially would limit game retrieval options and make hunting access more difficult. The overall effect of road closure is limited, though, by the low use of the area for recreational activities.

Motorcycle use in the southern portion of the unit would be eliminated for both the short and long term with this alternative. However, the proposed MFP for this area has recommended that all cycle use in the area be eliminated because of its impact on fragile soils and visual resource.

WILDLIFE

The possible reintroduction of native wildlife species as discussed in Chapter 3 Wildlife is permitted by BLM's WMP. The designation or non-designation of this WSA as wilderness will not affect the reintroduction of native species. Wilderness designation would have only a minor effect on game harvest as a management tool. There are eight vehicle ways totaling 14 miles that are used to some degree for hunting access and game retrieval. Wilderness designation would close these vehicle ways to motorized traffic; however, most hunting and game retrieval is done either on horseback or foot.

LIVESTOCK GRAZING

There are no specific range development proposals. The operators, however, are interested in water development AMEC (1982). Suitable reservoir sites are limited but rugged terrain and some vegetative screening could allow for new construction. A low impact to range developments is expected. There are 29 water developments and 16.5 miles of fence presently found in this WSA. Some of these have been abandoned. Those that still remain can be maintained with vehicles or heavy equipment as necessary.

The operators would have very restricted use of 11 vehicle ways totaling 23 miles. Frequent vehicle use is made for winter feeding and breaking of ice on waterholes by two operators. Occasionally, cattle are fed supplements delivered by 4-wheel drive vehicles AMEC (1982). Vehicles could be used for access to open frozen reservoirs but would not be allowed for routing, feeding or delivery of supplements. Large stockpiles of feed or supplements could be delivered at a central location within the WSA by vehicle.

Vehicle use would be restricted for observation of cattle and facilities. This has the potential to cost the operators additional time and money. The most efficient way to observe and herd cattle in this country, however, is by horseback.

Because of rugged terrain and limited vegetation 3,840 acres are not permitted for livestock grazing. There would be no wilderness impact on the range resource in these sections.

MINERALS

The potential for discovering economically recoverable amounts of oil is rated low by BLM geologists, while there is a moderate probability of finding natural gas in this unit. All of the WSA is leased for oil and gas. Approximately 47.7% of the acreage in this unit is included in pre-FLPMA oil and gas leases and 52.3% is included in post-FLPMA leases (see Figure 3.25).

Inherent in the pre-FLPMA leases are valid existing rights to explore for and develop reserves. In the short term (the life of the lease), there would be no impact to the minerals industry.

The WSA's rough character and the location of post-FLPMA leases scattered throughout the northern two-thirds of the unit would probably mean stringent restriction of exploration activities in post-FLPMA leases to protect wilderness values. As over half the acreage in the unit is included in post-FLPMA leases, there is potential for significant loss of opportunity to explore for natural gas.

Under present laws, a long-term conflict with the minerals industry would occur if this WSA were designated. Unexplored leases that expire after December 31, 1983, would not be re-issued in designated wilderness. The minerals industry would lose the long-term opportunity to explore and develop oil and gas reserves.

Wilderness would stop coal development. Meadowlark Farms, which filed three preference right lease applications (PRLAs) in Terry Badlands, would be allowed to request exchange for equal value coal, if and when they prove the economic feasibility of mining the coal. The resource has only been rated as moderate by BLM because of the low quality of the coal and the questionable economic feasibility of mining it. USGS has prepared a Preliminary Geologic Report (January 15, 1982) based on drill holes within the WSA. Those tests indicate the poor quality of the coal in most of the WSA. The report does indicate a possibility of economically feasible coal in limited portions of the WSA. USGS intends more research before preparing a coal development potential map in the summer of 1982. There are no other economically valuable minerals present in the WSA and there are no significant negative impacts to the mineral industry.

SOCIAL AND ECONOMIC CONDITIONS

ATTITUDES TOWARD WILDERNESS DESIGNATION

Local attitudes toward wilderness designation appear to be less negative than for other WSAs AMEC (1982).

RANCH RELATED ECONOMIC IMPACTS

The substitution of horses for casual vehicle use would result in increased expenses of approximately $1,105 and about 295 additional hours of labor annually. The potential loss in ranch loan values for long-term loans could be as much as $552,701, depending on the lender. Five operations have permits in this area. Two operations with about 85% of the AUMs would incur most of the increases in expenses.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative would result in enhancement, protection and preservation of wilderness characteristics on approximately 43,450 acres. The size of this unit is a major advantage to the quality of its primitive recreation and solitude opportunities. There is more than adequate land mass to provide visitors a deep sense of remoteness from the works of man. Offsite influences to the south include US Highway 94 (a 4-lane freeway), two railroads (one regularly used), and some farmland. These impacts limit the wilderness experience in about 10-15% of the total unit. When in the deep canyons, none of the sights and sounds can be detected. However, the ridgetops are open to full view of the roads and the few open drainages funnel sound into the unit.

The deeply dissected character of this unit makes for challenging and stimulating opportunities for primitive recreation. The topography and size combine to offer superb opportunities for solitude. Numerous groups could be present with little or no contact.

The supplemental values in this unit are outstanding and numerous. There are petrified trees, natural sandstone bridges and spectacular buttes. There is also a large stand of limber pine uncommon this far east which adds great diversity and vegetative screening. There is an historic peregrine falcon nesting sight within the WSA. Wilderness protection would create a favorable environment for reintroduction of this species. Though not present now, there are approved plans to introduce bighorn sheep in a part of the area.

MANAGEABILITY IMPACTS

The valid existing rights in the area are livestock grazing and mineral leases. The grazing permits cause a moderate negative impact as there will likely be conflicts stemming from a wilderness designation with the affected permitholders. Permittee use of motorized vehicles for facility maintenance or project development would be a periodic impact on wilderness values. There is limited vehicle access in this unit, however, and impacts associated with vehicle use would not be serious.

Approximately 48% of the area contains pre-FLPMA leases. Those leased areas could create a manageability problem as they can be explored and developed even if such activity degrades wilderness values.

Private inholdings cause a significant negative impact in Segment C (see Figure 2.12). Not only is a high percent of this portion privately-owned but the inholdings are scattered widely and would require several different access routes.

State inholdings within the unit would create a manageability impact. There are two sections of state land which would require access through the wilderness. One of these is presently served by a well established vehicle way. To eliminate these problems, those sections should be acquired if possible and included in the area if this WSA is designated as wilderness.

The overall pattern of landownership outside the boundary of the unit would not create a serious management problem. While a large percent of the boundary contacts private land, nearly all the adjacent private land is presently managed for grazing and appears natural. Even if a change in management occurred and private land was developed, so little of it is visible, no major impact would result. The exception to this is the southeast boundary along the Yellowstone River. Here some farmland is visible but even in combination with the railroad and two highways the impact would not be serious.

Access to this unit would be a major advantage. There are two separate routes on the north side, both totally on public land or legal rights-of-way. While partly on private land the Calypso Trail gives access through the heart of the unit. Both the old Milwaukee right-of-way and a county right-of-way provide access to some of the south. There is also good river access for 2½ miles of the otherwise, most inaccessible part of the unit.

TERRY BADLANDS

Partial Wilderness Alternative 1

RECREATION

This alternative would result in closure of 15,170 acres to motorized vehicle use (see Segment A, Figure 2.12). As nearly all the vehicle ways which enter this WSA are located west and south of the lands in this alternative, in Segments B and C, vehicle access primarily for hunters would not be impacted.

WILDLIFE

The impacts for this alternative would be similar to the All Wilderness Alternative except that vehicle ways in Segments B and C would remain open for vehicle hunting.

LIVESTOCK GRAZING

With this alternative, four water developments, 1 mile of fence and 1.5 miles of vehicle ways would be within wilderness. There would be a low impact to grazing management.

MINERALS

Selection of this alternative would reduce the potential conflict with the minerals industry by eliminating 66% of the lands that contain post-FLPMA leases. As approximately half the remaining acreage (7,690 acres) would still contain post-FLPMA leases which carry restrictive wilderness protection stipulations, there would still be significant short-term conflicts (the life of the lease) with the minerals industry.

Long-term impacts if the unit were designated wilderness would be the same as described in the All Wilderness Alternative.

The coal lands in the southwest portion of the WSA are not included in the boundaries of this alternative.

SOCIAL AND ECONOMIC CONDITIONS

ATTITUDES TOWARD WILDERNESS DESIGNATION

Local people appear to recognize this area as an appropriate site for wilderness designation AMEC (1981). The fact that part of the area is not permitted for grazing contributes to this acceptance.

RANCH RELATED ECONOMIC IMPACTS

Since there are less than 2 miles of vehicle ways in this partial alternative, the expense of substituting horses for casual vehicle use is almost eliminated. This expense is decreased to $70 and 20 additional hours of labor annually. The potential loss in ranch loan value for long-term loans could be as much as $158,634, depending on the lender. Four operations have permits to graze in this area. This alternative almost eliminates the impacts on one of the major operations. Approximately 25% of this area is unallocated for grazing.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative would result in enhancement, protection and preservation of wilderness characteristics on approximately 15,170 acres. The size would be a moderate advantage. While large enough to possess the outstanding qualities of solitude as discussed in the All Wilderness Alternative, it would be too small and homogeneous in character to offer outstanding opportunities for primitive recreation. Negative offsite influences would be the same as those described in the All Wilderness Alternative.

MANAGEABILITY IMPACTS

Far fewer range facilities would be included in this alternative, thereby decreasing the impact of these developments on naturalness and solitude. Only 75% of this subunit is permitted for grazing.

This alternative eliminates the management problems of inholdings. The two state sections and the private land inholdings are not included in this alternative.

Approximately half the land included in this alternative is covered by pre-FLPMA leases. These leases contain valid existing rights to explore and develop, creating potential for wilderness manageability conflicts.

Coal mining, if it occurred, would be within leases located 2 miles outside the boundaries of this alternative. Impacts to wilderness would be limited to distant sights and sounds.

Much of this alternative is surrounded by public land or presently undeveloped privately-owned lands. Overall, the benefits from land status would be about the same as in the All Wilderness Alternative.

This alternative has public access on all sides from the Yellowstone River, a county road and the Calypso Trail.

TERRY BADLANDS

Partial Wilderness Alternative 2

RECREATION

Selection of Alternative 2 would result in the designation of 29,020 acres as wilderness (see Segments A and B, Figure 2.12). Impacts would remain generally the same as described in Partial Wilderness Alternative 1. Several additional miles of vehicle ways would be closed to hunters and other recreationists. The major network of trails in the south part of the WSA would remain open.

WILDLIFE

The impacts of Alternative 2 would be the same as the All Wilderness Alternative except that vehicle ways in Segment C would remain open to vehicle hunting.

LIVESTOCK GRAZING

There would be less impact than with the All Wilderness Alternative. With this alternative 17 water developments, 8.25 miles of fence and 12 miles of vehicle ways would be within wilderness. The grazing permittees would be moderately affected by wilderness restrictions on use of vehicle ways.

MINERALS

Approximately 44% of the post-FLPMA leases in the All Wilderness Alternative would not be recommended for wilderness with this alternative. Approximately 12,610 acres of the unit containing post-FLPMA leases would still remain. Exploration and development work will not be allowed. The inclusion of this leased acreage represents a short-term conflict with the minerals industry.

Long-term impact to the minerals industry if the unit were designated would be the same as described in the All Wilderness Alternative.

SOCIAL AND ECONOMIC CONDITIONS

ATTITUDES TOWARD WILDERNESS DESIGNATION

Local attitudes would favor this alternative over All Wilderness Alternative.

RANCH RELATED ECONOMIC IMPACTS

This alternative would reduce the expense of substitution of horses for casual vehicle use to $576 and about 155 additional hours of labor annually. The potential loss in ranch loan values for long-term loans could be as much as $352,520, depending on the lender. Impact would be almost eliminated for one of the major operations. The potential loss would be incurred mainly by the one major operation remaining.

WILDERNESS

EVALUATION OF WILDERNESS VALUES

This alternative would result in enhancement, protection and preservation of wilderness characteristics on some 29,020 acres. The size of this unit is a major advantage. It contains the majority of outstanding characteristics described in the All Wilderness Alternative while eliminating the area with less wilderness quality.

The Calypso Trail splits this alternative. Traffic on this trail would cause an occasional impact upon solitude with this alternative but because of extremely rugged terrain, these impacts would only be site specific. Somewhat fewer range improvements would be included in this alternative thus eliminating some impacts on natural characteristics and solitude opportunities in the unit. All offsite intrusions noted in the All Wilderness Alternative would be the same but would be buffered by the undeveloped lands in Segment C.

MANAGEABILITY IMPACTS

This alternative eliminates the management problems created by one state section inholding and the private land inholdings. One state section would remain. Attempts should be made to acquire this section and include the land within the wilderness area.

This alternative includes 16,410 acres containing pre-FLPMA leases. These leases could be developed without wilderness constraints creating a potential wilderness manageability conflict.

Coal extraction could occur outside the borders of the unit with this alternative and could create offsite disturbance on solitude.

The surrounding landownership would be the same as in the All Wilderness Alternative except that there would be a buffer zone to the south of public land which screens offsite impacts to the south.

This area has good public access from the county road on the north, the Calypso Trail that separates the two segments in this alternative and the Yellowstone River on the south.

TERRY BADLANDS

No Wilderness Alternative

RECREATION

No significant impacts.

WILDLIFE

A loss of wildlife habitat would result from coal development that could not occur if the unit was designated as wilderness.

LIVESTOCK GRAZING

See General Impacts.

MINERALS

This alternative would eliminate a barrier to coal development in the southern portion of this WSA. Post-FLPMA leases would be removed from any wilderness constraints.

SOCIAL AND ECONOMIC CONDITIONS

See General Impacts.

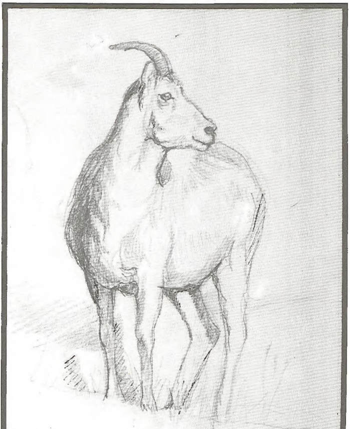
WILDERNESS

This alternative would result in the loss of 43,450 acres of public land to the wilderness system. Under this alternative, much of the area would retain most of its wilderness character, at least in the short term.

Those necessary range management activities would have little, if any, negative impact on the unit.

Due to the possibility that oil or gas exists under this unit, some amount of exploration could occur. If a discovery is made, impacts to the wilderness character would result. Since there is a fairly high percent of pre-FLPMA leases present in the unit, some of this damage could occur in the short term even with wilderness designation.

There are PRLAs to mine coal on approximately 7,400 acres within the WSA. Strip mining this coal could result in destruction of all wilderness values in and around the mine area for both the short and long term. Even those portions of the unit not directly impacted would suffer impacts to solitude and be subject to major negative sights and sounds of man.



FIVE

CONSULTATION & COORDINATION

CONSULTATION AND COORDINATION

The Missouri Breaks Wilderness Draft Environmental Impact Statement was prepared by specialists from the BLM's Lewistown and Miles City District Offices, with assistance from BLM's Big Dry, Havre, Judith, Phillips and Valley Resource Area Offices and the Montana State Office. Disciplines and skills used to develop this EIS were: vegetation and range use, animal husbandry, soils, recreation, climate, sociology, economics, printing, public affairs and typing. The writing of this EIS began in May 1981; research began in 1978 with the wilderness review required by FLPMA. The process included inventories of resources, public participation and coordination with other agencies, organizations and individuals. Consultation and coordination occurred in a number of ways and care was taken that the planning criteria used in preparing this EIS are consistent with other land management agencies. An overview of the wilderness review process can be taken from Appendix 1.2, the Chronology of the Wilderness Review.

An active public involvement process aided in developing this EIS. Public opinion was elicited through public meetings in Jordan, Lewistown, Havre, Malta and Glasgow; personal interviews; mailings to an extensive list of groups and individuals in affected areas; a notice in the *Federal Register* and follow up mailings. The major emphasis of the public involvement process was identifying issues the public wanted considered in this EIS.

The public's role was vital in developing this EIS.

AGENCIES AND ORGANIZATIONS CONSULTED

The Missouri Breaks Wilderness EIS Team consulted and/or received comments from the following during the preparation of this Draft EIS.

Business and Industry:

True Oil Company
Amoco Production Company
Continental Oil Company (Conoco)
Inland Forest Resource Council
Northern Bank of Montana (Big Sandy)
Atlantic Richfield Company
Rocky Mountain Oil and Gas Association Inc.
Natural Gas Corporation of California
Fuel Resources Development Co. (Fuelco)
Wexpro Company
Transco Exploration Company
Marathon Oil Company

State Agencies and Organizations:

Montana Department of Fish, Wildlife and Parks
Montana Department of State Lands
Governors Natural Resources Council
Montana State Historical Preservation Officer

County Commissioners and Planning Boards:

Custer County
Valley County
Phillips County
Blaine County
Fergus County
Garfield County
Prairie County

Federal Agencies:

Fish and Wildlife Service
Bureau of Mines
Council on Environmental Quality
U.S. Geological Society
Environmental Protection Agency
Bureau of Reclamation
Department of Defense
  Corps of Engineers
  Army
  Air Force

COMMENTS REQUESTED

Comments on the Draft EIS have been requested from the following agencies and organizations and individuals too numerous to list.

Congressional Offices:

Office of Senator Baucus
Office of Senator Melcher
Office of Congressman Marlenee
Office of Congressman Williams

County Commissioners and Planning Boards:

Custer County
Valley County
Phillips County
Blaine County
Fergus County
Garfield County
Prairie County

Other Organizations:

Montana Wildlife Federation
Sierra Club
Environmental Information Center
Northern Plains Resource Council
Montana Wilderness Association
Montana-Wyoming Rep. The Wilderness Society
Montana Rep. Defenders of Wildlife
Fergus County Stockgrowers
Montana Guides and Outfitters Association
Western Environmental Trade Association
Five Valley Audubon Society
Friends of Earth
Good Guys Cycle Club
Grass Range CS Grazing District
Harlem Rod and Gun Club
Lewistown Rod and Gun Club
Missouri Breaks Multiple Use Association
Montana Wilderness Institute
Montana Stockgrowers
Square Butte Grazing Association
South Phillips Cooperative State Grazing District
Phillips County Livestock Association
PN Grazing Association
North Central Montana Stockgrowers Association
Montana Public Lands Council
Hinsdale Livestock Company

CONSISTENCY WITH OTHER PLANS

FLPMA requires that BLM plans be as consistent as possible with other agency plans, while considering Federal laws, policies and regulations.

Other Federal agency, city, county and state plans in the EIS area were considered in the preparation of this report.

Federal Agencies

UNITED STATES FISH AND WILDLIFE SERVICE

Four of the Wilderness Study Areas are contigous with four administratively indorsed WSAs in the Charles M. Russell National Wildlife Refuge. It appears there are no conflicts with either agency in the study, recommendation or designation of these WSAs. The potential exists for a cooperative agreement between the two agencies on the management of contigous wilderness areas.

UNITED STATES AIR FORCE

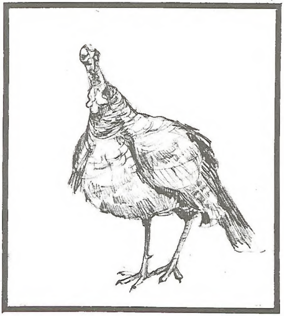
Through conversations with the USAF, low level flights over several WSAs were brought to BLM's attention. There is a conflict between these flights and wilderness quality, which is considered in this suitability report. If these flights become a problem in a designated wilderness area, they could be discussed with the Air Force to determine if any solutions exist.

State of Montana

A recently signed Memorandum of Understanding among the BLM, the Forest Service and the Governor created the Natural Resources Council. This council will serve as a clearing house for consultation on all natural resource issues. This group will study the recommendations of this report for consistency.

City-County Plans

No specific conflict with wilderness study has been identified in any city or county plans. Specific issues which deal with economic impacts of wilderness on affected counties are identified and discussed in this document.



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Following are the people who worked on this EIS.

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MSO and LDO Assistance

These people from the Montana State Office, BLM, Lewistown District Office and various Resource Area Offices assisted in preparing the EIS:

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Kathy Ives — Editorial Assistant

Cris Roholt — Economist

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Jay Spielman — Geologist

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APPENDICES

APPENDIX 1.1: EXCERPTS FROM BLM MANAGEMENT FRAMEWORK PLAN

The following are excerpts from the five management framework plans (MFPs) and the two transition management framework plans that will be amended at the time a final decision on wilderness designation is made by Congress. Five MFPs were prepared in 1977 at the beginning of the wilderness review process. They were therefore somewhat limited in the scope of management recommendations regarding wilderness. This document serves to update these MFPs by evaluating areas selected as wilderness study areas and making recommendations as to those areas suitable or unsuitable for wilderness designation. The two transition MFPs were prepared in draft in 1981. They recommend that Musselshell Breaks and Terry Badlands be designated wilderness, pending recommendations made in this Suitability Report/EIS and final action by Congress.

OBJECTIVES	RECOMMENDATIONS	DECISIONS
	South Bearpaw MFP	
To identify and protect lands in the planning area of high wilderness value and of adequate size for inclusion into the National Wilderness System.	R-8.1 All areas within the planning unit of predominately public land which meet the basic criteria of 1) 5,000 or more acres or of a manageable size to maintain essential wilderness characteristics, 2) roadless and 3) primitive character will be inventoried for wilderness characteristics and possible inclusion into the National Wilderness System by 1991. Lands in the planning unit presently identified as perhaps meeting the above criteria include: Spring Creek (QPpr-001), Chip Creek (QPpr-002), Sand Creek (QPpr-003), Missouri Breaks (QPpr-004) and Bullwacker Creek (QPpr-005).	Recreation Recommendation R-8-1 is accepted.
	R-8.2 All wilderness study areas will be managed so as to preserve their wilderness characteristics. All current activities can continue subject to controls in order to protect wilderness values. Under the Organic Act, this provides for the continuation of existing mining use, grazing use and mineral leasing in the same manner and degree as was being conducted on October 21, 1976.	Accept the Multiple-Use Recommendation.
	Phillips MFP	
To identify and protect lands in the planning area of high wilderness value and of adequate size for inclusion into the National Wilderness System.	R-6.1 All areas within the planning unit of predominately public land which meet the basic criteria of 1) 5,000 or more acres or of a manageable size to maintain essential wilderness characteristics, 2) roadless and 3) primitive character will be inventoried for wilderness characteristics and possible inclusion into the National Wilderness System by 1991. Lands in the planning unit presently identified as perhaps meeting the above criteria include Sage Creek, Burnt Lodge, Indian Lake, Dry Lake, Flat Creek, White Rock Coulee, Dry Fork and Slippery Ann Creek, Bull Creek, Antelope Creek (West Antelope), East Frenchman Creek, West Frenchman Creek, Black Coulee I, Black Coulee II and Cottonwood Creek.	Recreation Recommendation R-6.1 is accepted.
	R-6.2 All wilderness study areas will be managed so as to preserve their wilderness characteristics. All current activities can continue subject to controls in order to protect wilderness values. Under the Organic Act, this provides for the continuation of existing mining use, grazing use and mineral leasing in the same manner and degree as was being conducted on October 21, 1976.	Accept the Multiple-Use Recommendation.
	Fergus MFP	
To identify and protect lands in the planning area of high wilderness value and of adequate size for inclusion into the National Wilderness System.	R-7.1 All areas within the planning unit of predominately public land which meet the basic criteria of: 1) 5,000 or more acres or of a manageable size to maintain essential wilderness characteristics; 2) roadless; and 3) of primitive character will be inventoried for wilderness characteristics and possible inclusion into the National Wilderness System by 1991. Lands in the planning unit presently identified as perhaps meeting the above criteria include: Ppr-001 Dog Creek South Ppr-002 Chimney Bend Ppr-003 Woodhawk Ppr-004 Two Calf Creek Ppr-005 Armelle Creek Ppr-006 Carrol Coulee Ppr-007 Square Butte	Recreation Recommendation R-7.1 is accepted.

	7-7.2 All wilderness study areas will be managed so as to preserve their wilderness characteristics. All current activities can continue subject to controls in order to protect wilderness values. Under the Organic Act, this provides for the continuation of existing mining use, grazing use and mineral leasing in the same manner and degree as was being conducted on October 21, 1976.	Accept the Multiple-Use Recommendation.
	Valley MFP	
To identify and protect lands in the planning area of potential wilderness value and of adequate size for inclusion into the National Wilderness System.	R-15.1 All areas within the planning unit of predominately public land which meet the basic criteria of: 1) 5,000 or more acres or of a manageable size to maintain essential wilderness characteristics; 2) roadless and; 3) of primitive character will be inventoried for wilderness characteristics and possible inclusion into the National Wilderness System by 1991. Lands in the planning unit presently identified as perhaps meeting the above criteria include: Ppr-001 Burnt Lodge Ppr-002 Timber Creek Ppr-003 Gravel Hill Ppr-004 Carpenter Creek Ppr-005 Bomber Ppr-006 Dog Creek North Ppr-007 Grant Creek Ppr-008 Lone Tree Ppr-009 Sage Creek	Recreation Recommendation R-7.1 is accepted.
	R-15.2 All wilderness study areas will be managed so as to preserve their wilderness characteristics. All current activities can continue subject to controls in order to protect wilderness values. Under the Organic Act, this provides for the continuation of existing mining use, grazing use and mineral leasing in the same manner and degree as was being conducted on October 21, 1976.	Accept the Multiple-use Recommendations.
	Musselshell MFP	
Field check public property within the Planning Unit to accurately assess those areas which qualify for formal wilderness study.	R-1.1 Submit the (18,000 + acre) Seven Blackfoot Area for for review as a potential Wilderness Area (QPpr-076 on overlay).	Accept Step 2 Multiple-Use Recommendation.
	Jordan/North Rosebud	
Provide for the protection of all wilderness values now present in the Musselshell Breaks until such time as Congress acts on the issue and implements proper management tools thereafter, if a wilderness is created.	W-1.1 Recommend that the Musselshell Breaks WSA be designated a component of the National Wilderness Preservation System. (Preliminary Recommendation, subject to modification in subsequent wilderness EISs). If the WSA is not designated a component of the wilderness system, then the area will revert to multiple use management.	
	W-1.2 Recommend that all inholdings within the perimeter of the Musselshell Breaks WSA be acquired by purchase or exchange.	
	W-1.3 ORV activities should be limited to existing vehicle ways, (as designated by wilderness inventory) except as specifically authorized.	
	W-1.4 Manage the Musselshell Breaks WSA MT-024-677 consistent with the Interim Management Policy and Guidelines for Lands Under Wilderness Review (dated 12-12-79) until action by the Congress.	
	New Prairie Transition MFP	
Provide for the protection of all wilderness values not present in the Terry Badlands until such time as Congress acts on the issue and implements proper management tools thereafter, if a wilderness is created.	W-1.1 Recommend that the Terry Badlands WSA be designated a component of the National Wilderness Preservation System. (Preliminary Recommendation, subject to modification in subsequent EIS). If not so designated, this area will revert to multiple use management.	

W-1.2
Recommend that all inholdings within the perimeter of the Terry Badlands WSA be acquired by purchase or exchange.

W-1.3
ORV activities should be limited to existing vehicle ways, (as designated by wilderness inventory) except as specifically authorized.

W-1.4
Manage the Terry Badlands WSA MT-020-684 consistent with the Interim Management Policy and Guidelines for Lands Under Wilderness Review (dated 12-12-79) until approved by the Congress.

Source: BLM, 1981

APPENDIX 1.2: CHRONOLOGY OF THE WILDERNESS REVIEW

1) March 1978 - The Fergus, Valley, Phillips, South Bearpaw and Musselshell MFPs were signed by the State Director. The wilderness inventory and recommendations involving wilderness study and potential management options were address in each of the four documents involved in the proposed suitability study and EIS. A review of each of the MFP documents has been conducted in accordance with the provisions of the planning regulations 1601.8(b)(1). It was determined that the plans have been developed with adequate public participation.

2) February 1978 - Draft Wilderness Inventory Handbook. BLM issued draft procedures for conducting the review of Bureau managed lands for wilderness characteristics as mandated by FLPMA. The draft was discussed at more than 60 public meetings held throughout the western states. Some 5,000 letters were sent to the BLM on proposed inventory procedures.

3) September 1978 - Inventory Handbook (Blue Book). This document incorporated public comments on the draft handbook and outlined final procedures on inventory.

4) November 1978 - State Director announced the beginning of the wilderness inventory process.

5) November 1978 - Northern Tier accelerated inventory announced in Federal Register.

6) December 1978 - Public meetings in Jordan and Terry on Northern Tier accelerated inventory for Terry Badlands.

7) March 1979 - Proposal to designate Terry Badlands as a wilderness study area. This proposal was followed by a 30 day public review.

8) April 1979 - State Director issued the Proposed Initial Inventory Decision. A mailing list of approximately 3,000 persons and organizations were mailed a map identifying initial inventory areas. A 90 day public comment period followed the map release.

9) April 1979 - Public meetings were held in Ekalaka, Broadus, Jordan on the Proposed Initial Inventory Decision.

10) May 1979 - Public meetings were held in Glasgow, Malta, Havre, Lewistown, Billings and Lovell. At these meetings, the public was informed of all procedures involved in the wilderness process up to designation as a wilderness study area. Specific comments were solicited on a unit by unit basis.

11) May 1979 - Final decision was made to designate Terry Badlands as a WSA. A 30 day appeal period followed. There were no appeals.

12) A contract was awarded to the Wilderness Institute, University of Montana, to prepare a content analysis of public input from the 90 day public comment period on the initial inventory decision. A document was published on July 16, 1979, which was incorporated into the final initial inventory decisions. Five hundred seventy-nine groups, organizations and individual's comments were analyzed in this document.

13) August 1979 - The Final Initial Wilderness Inventory Decision was released. This included a map and document. Approximately 3,000 persons and groups received the information on the final initital inventory.

14) December 12, 1979 - Interim Management Policy and Guidelines for Lands Under Wilderness Review was released to the public.

15) March 1980 - The Montana Intensive Wilderness Inventory Proposed Decision was released. A map and document were published and mailed to over 3,000 individuals and organizations. An extended five month (150 day) public comment period began March 31, 1980.

16) April 1980 - Public workshops were held in Glasgow, Malta, Havre, Lewistown, Billings and Lovell covering the Montana Intensive Wilderness Inventory Proposed Decision. Information on specific inventory units was solicited and questions were answered on individual units and on the wilderness evaluation process.

17) May 1980 - Open houses on the Montana Wilderness Inventory Proposed Decision held in Jordan, Broadus, Ashland and Miles City.

18) August 30, 1980 - The extended public comment period ended on the proposed inventory decision. Content analysis was prepared from these comments by the Montana State Office of Public Affairs. This data was incorporated into the State Director's final decision. Seven thousand nine hundred written comments were received and analyzed in making the Final Decision.

19) November 15, 1980 - State Director announced the Final Decision Montana Wilderness Inventory. A 45 day protest period began.

20) December 31, 1980 - Protest period ends.

21) March 1981 - The State Director sent registered mail decisions on the protests received in December, 1980. These decisions were based on the merits of the individual protests. In cases where site specific review was necessary BLM staff along with the protesting group made trips to the area.

22) The public was notified of their right to appeal or make notice of their intent to appeal protest decisions within 30 days. The following is a list of areas within the general study area that have been appealed to IBLA. Several of the inventory units had more than one appeal; some groups or individuals wanted acreage or units added while others wanted them dropped.

Unit Name	Unit Number	Acreage Deletions	 Additions
Wall	MT-066-249		6,700+
Stafford	MT-066-250	4,700	2,477
Ervin Ridge	MT-066-253		8,400
Bullwacker	MT-066-255		10,000
Cow Creek	MT-066-256	36,200	8,000
Antelope Creek	MT-065-266	12,340	
Dog Creek South	MT-068-244	5,230	
Chimney Bend	MT-068-245		12,500
Woodhawk	MT-068-246	7,855	

23) May 15, 1981 - The Federal Register Notice of Intent to Study 10 Wilderness Study Areas was released to the public. This notice set open house dates for discussion of the planning process and the issues to be analyzed in the Draft Suitability Report/EIS.

24) May-June 1981 - Open houses to discuss the Missouri Breaks Wilderness Suitability Study were held in Lewistown, Jordan, Glasgow, Malta and Havre.

25) July 16, 1981 - Federal Register notice was released announcing the inclusion of Terry Badlands and Musselshell Breaks as part of the Draft Missouri Breaks Wilderness Suitability Report/EIS.

26) May 24, 1982 - Draft Missouri Breaks Suitability Report/EIS released to public for 60 day review and comment.

Source: BLM, 1981

APPENDIX 1.3: ISSUE IDENTIFICATION LETTER

May 21, 1981

Dear Citizen:

The Bureau of Land Management is starting the study of ten Wilderness Study Areas (WSAs) in the Missouri Breaks region of central Montana. Seven of the WSAs are in BLM's Lewistown District and three are administered by our Miles City District. The two District Offices will work together on the effort, but the Lewistown District Office will have the direct responsibility for completing the study. The areas that we'll be studying are:

Dog Creek South	Fergus Co.	5,230 Acres	MT-068-244	Antelope Creek	Phillips Co.	12,340 Acres	MT-065-266
Woodhawk	Fergus Co.	7,855 Acres	MT-068-246	Burnt Lodge	Phillips Co. and Valley Co.	15,000 Acres	MT-065-278
Stafford	Blaine Co.	4,700 Acres	MT-066-250	Billy Creek	Garfield Co.	3,480 Acres	MT-024-633
Ervin Ridge	Blaine Co.	12,000 Acres	MT-066-253	Seven Blackfoot	Garfield Co.	19,677 Acres	MT-024-657
Cow Creek	Blaine Co. and Phillips Co.	36,200 Acres	MT-066-256	Bridge Coulee	Garfield Co.	5,650 Acres	MT-024-675

The BLM's decision to study these particular areas was subject to appeal. Appeals, or notices of intent to appeal, have been received on Dog Creek South, Woodhawk, Ervin Ridge, Stafford, Cow Creek and Antelope Creek. In addition, notices of intent to appeal have been received for two units (The Wall and Chimney Bend) that BLM had dropped from further Wilderness Study. All appeals will be heard by the Department of the Interior's Board of Land Appeals. If the Board's decisions drop or add WSAs, within a reasonable amount of time, the scope of this project could be revised to incorporate their findings.

I'd like to ask you to help us begin by making sure that we know all the issues that should be part of our study. I've enclosed a summary of the issues that arose during our two-year inventory of wilderness characteristics. If you wish to add to the list or clarify any issues, I've arranged two open houses to discuss them:

On May 27, 1981, at the Lewistown District Office on Airport Road in Lewistown, between 2:00 and 7:00 p.m.
On May 28, 1981, at the VFW Club in Jordan, between 6:30 and 9:00 p.m.

In addition to the open houses, BLM personnel will be available from 8:30 a.m. to 4:30 p.m. along the Hi-Line:

On Tuesday, June 9th in the Valley Resource Area Office in Glasgow.
On Wednesday, June 10th in the Phillips Resource Area Office in Malta.
On Thursday, June 11th in the Havre Resource Area Office in Havre.

In addition to identifying issues, you may wish to discuss the "Planning Criteria" that BLM will use to arrive at our recommendations. I've included a summary of those criteria which were described in the Draft Wilderness Study Policy that has been available since January.

If you couldn't attend either of the open houses and can't stop by the Resource Area Offices, please take time to write. It would be most helpful if we could hear from you by June 27, 1981.

Thank you for your help so far and I look forward to working with you throughout the study.

Sincerely yours,

David E Little

for Glenn W. Freeman
District Manager

Enclosure

MISSOURI BREAKS WILDERNESS STUDY

THE STUDY

The study will result in the publication of a Wilderness Plan Amendment/Environmental Impact Statement (WPA/EIS) by September 30, 1982. In developing the WPA/EIS, a team of BLM resource specialists, representing each of the multiple uses of public lands, will determine conflicts or benefits that would result from wilderness designation for each study area. A preliminary recommendation will then be forwarded, after public review, to the Secretary of the Interior. The Secretary will make recommendations to the President and the President will then send his recommendations to Congress. Congress will make the final decision whether or not an area should be actually designated as Wilderness. At the time Congress makes their decision, the management plan for the affected planning area will be amended by reference to the WPA/EIS. Management plans for Wilderness areas will be prepared only after an area is designated by Congress.

THE ISSUES

Since the wilderness inventory was started in November 1978, the public has provided much comment about the wilderness characteristics of the ten wilderness study areas in the Missouri River Breaks. BLM has also received substantial comment on how designation would affect the historical uses of the Breaks and these are the issues that will be considered through the multiple resource analysis.

The following are summaries of the major comments BLM received during the inventory:

1. Wilderness would interfere with, or eliminate, grazing on public lands.
2. Wilderness would interfere with, or eliminate, oil and gas exploration and production on public lands.
3. Wilderness designation would protect the land in a natural condition.
4. Wilderness would interfere with, or eliminate, treatment of noxious weeds.
5. Wilderness would eliminate use of motor vehicles for hunting, grazing management, or recreation uses.
6. The Breaks are a unique ecotype.
7. An area would no longer be accessible by older populations.
8. Wilderness would bring unwarranted attention by outsiders.
9. The Breaks are a historically significant area which should be preserved.
10. Wilderness would change density and composition of wildlife.
11. Wilderness would interfere with fighting wildfire.
12. The Breaks have high scenic value.
13. Wilderness in the "Wild and Scenic" River Corridor would be double protection.
14. Wilderness would reduce land or loan values for grazing operations.
15. Wilderness designations would preserve an area for solitude and undeveloped outdoor recreation.
16. Wilderness would limit construction or maintenance of range facilities.
17. The land would remain the same without a wilderness designation.
18. Wilderness designation would protect watershed and eliminate some erosion by eliminating road building and use.
19. The areas would be too small and not manageable.
20. The areas are not natural; there are signs of past use by man.
21. Wilderness would be long term preservation for future generations.
22. There is too much wilderness in Montana already.
23. Wilderness would be used only by the rich.
24. Designated wilderness in the Breaks would be a national resource.
25. There is no drinking water available in the areas.
26. Congress did not intend wilderness designation for open prairie and river breaks.

THE ALTERNATIVES AND PLANNING CRITERIA

Study alternatives will include options of all wilderness and no wilderness within a particular study area. Any number of partial wilderness options, based on resource conflicts, may be included as well. The Draft Wilderness Study Policy describes nine national planning criteria which will be used to define alternatives and to deal with the issues. The criteria are:

1. BLM will determine what resource values are present and whether or not any of those values would be lost through designation. The analysis must show that resource values gained, including wilderness values, outweigh resource uses lost over the long term. The interdisciplinary team approach will be used to accomplish the objectives of this criteria.

2. The involvement of the public, in particular local populations, will be solicited throughout the process. Resource specialists will consult with affected public land users such as ranchers, oil and gas interests, recreationists, and wilderness users. Once alternatives, including the preferred alternative are developed, a draft study report will be released and public comments will be fully considered before a final decision is made.

3. Whenever possible resource values will be analyzed in terms of their economic effects on local communities or surrounding regions. Local and national attitudes concerning wilderness designation will also be considered.

4. Energy and critical mineral resource values have a significant impact on the suitability of a Wilderness Study Area. Existing information on geological structures, advice from the minerals industry, and evaluations by U.S. Geological Survey and Bureau of Mines will all be used in determining the effects of wilderness designation on the supply of minerals.

5. Throughout the study process, the alternatives will be consistent with other Bureau or Federal agency plans as well as State and local resource use plans.

6. The study will consider the loss of resource uses if an area is designated as wilderness.

7. The loss of existing wilderness character if an area is not designated will be considered.

8. All areas have been evaluated to see if they contain the minimum characteristics to qualify for further study. The decision on suitability requires consideration of supplemental values exceeding the minimum. Access, valid pre-existing rights, size, and proximity of off-site impacts will be carefully analyzed.

9. The study team will consider how a particular unit increases the diversity of the National Wilderness Preservation System and how the additional land would enhance the overall system.

Source: BLM, 1981

APPENDIX 2.1: LEGAL DESCRIPTIONS OF WILDERNESS STUDY AREAS

Dog Creek South WSA

T. 23 N., R. 17 E. Principal Meridian, Montana

Section 19: Lots 19 & 20
Section 20: Lots 5, 6, 7, & 8
Section 26: SW1/4, S1/2SE1/4
Section 27: Lots 1, 2, 4, S1/2NE1/4, SE1/4NW1/4, S1/2
Section 28: Lots 3, 4, 5, 6, S1/2NW1/4, S1/2
Section 29: All
Section 30: Lots 1, 2, 8, 9, 14, E1/2NE1/4 SW1/4NE1/4, SE1/4
Section 31: Lots 1, 7, 8, 9, 10, 15, 16, E1/2
Section 32: All
Section 33: N1/2NE1/4, W1/2
Section 34: NE1/4SE1/4
Section 35: NE1/4NE1/4, W1/2NE1/4, NW1/4 N1/2SW1/4

T. 22 N., R. 17 E. Principal Meridian, Montana

Those portions north of Dog Creek Road in Sections 5 & 6
Those portions north of Dog Creek Road in Lot 4, SW1/4NW1/4, Section 4

Stafford WSA

T. 23 N., R. 17 E. Principal Meridian, Montana

Section 13: S1/2S1/2
Section 14: S1/2SE1/4
Section 15: Those lands south of Birch Creek Hill Road
Section 20: Lot 1, S1/2NE1/4
Section 21: Those lands south of Birch Creek Hill Road in NE1/4NE1/4; Lots 1, 5, W1/2NE1/4, SE1/4NE1/4, NW1/4, NE1/4SW1/4, N1/2SE1/4, SW1/4SE1/4
Section 22: Lots 1, 2, NE1/4, S1/2NW1/4, N1/2SW1/4 and those lands south of Birch Creek Hill Road in N1/2NW1/4
Section 23: Lots 1, 3, N1/2, NE1/4SW1/4, SE1/4
Section 24: All
Section 25: Lots 1, 2, 3, 4, NE1/4, N1/2NW1/4, SE1/4, NW1/4
Section 26: Lots 1, 5, NE1/4NE1/4
Section 28: Lot 2

T. 23 N., R. 18 E. Principal Meridian, Montana

Section 18: Lot 4
Section 19: Lots 1, 2, & 4
Section 27: Those lands south of Boiler Bottoms Road in Lot 7
Section 28: Those lands south of Boiler Bottoms Road in S1/2
Section 29: S1/2N1/2, S1/2
Section 30: Lots 1, 2, 3, 5, E1/2, E1/2NW1/4 NE1/4SW1/4
Section 31: Lots 1 & 2
Section 32: Lots 1, 2, 3, & 4
Section 33: Lots 2, 3, 4, N1/2NW1/4, and those lands south of Boiler Bottoms Road in Lot 1, NW1/4NE1/4
Section 34: Lot 3

Ervin Ridge WSA

T. 23 N., R. 19 E. Principal Meridian, Montana

Section 1: Lots 1, 2, 3, 4, 6, 7, & 8

T. 23 N., R. 20 E. Principal Meridian, Montana

Section 1: Lots 1, 2, 3, 4, 5, 6, 10, SW1/4NW1/4
Section 2: Lots 1, 2, 3, 4, 5, 6, 7, S1/2N1/2, N1/2SW1/4, SW1/4SW1/4, NW1/4SE1/4
Section 3: All
Section 4: All
Section 5: Lots 1, 2, 3, 4, 5, 6, 7, 11, S1/2N1/2, NE1/4SE1/4
Section 6: Lots 1, 2, 3, 4, 5, 6, 7, 8, S1/2NE1/4, SE1/4NW1/4
Section 9: Lots 1, 3, 4, N1/2NE1/4
Section 10: Lots 1, 2, 3, & 4
Section 11: Lot 3

T. 24 N., R. 19 E. Principal Meridian, Montana

Section 22: Those lands south of Lone Tree Ridge Road in NE1/4NE1/4, S1/2, N1/2, NW1/4NW1/4, S1/2; excluding oil and gas road in S1/2SW1/4
Section 23: Those lands south of Lone Tree Ridge Road
Section 24: Those lands south of Lone Tree Ridge Road
Section 25: All
Section 26: Those lands north of Barnard Ridge Road.
Section 27: Those lands north of Barnard Ridge Road excluding oil and gas road in N1/2N1/2

T. 24 N., R. 20 E. Principal Meridian, Montana

Section 19: Those lands south of Lone Tree Ridge Road
Section 25: Those lands south of Ervin Ridge Road
Section 26: Those lands south of Ervin Ridge Road
Section 27: Those lands south of Ervin Ridge Road
Section 29: Those lands south of Ervin Ridge Road
Section 30: Those lands south of Lone Tree Ridge Road and Ervin Ridge Road
Section 31: All
Section 32: Lots 1, 2, 3, 4, S1/2N1/2, N1/2S1/2, and those lands south of Ervin Ridge Road and Bird Road in NW1/4NE1/4, N1/2NW1/4
Section 33: Lots 1, 2, 3, 4, NE1/4, NE1/2NW1/4, S1/2NW1/4, N1/2S1/2, excluding Bird Road
Section 34: All, excluding Bird Road in W1/2
Section 35: All

Antelope Creek WSA

T. 23 N., R. 22 E. Principal Meridian, Montana

Section 10: Those lands south and east of Power Plant Ferry Road
Section 11: Those lands south of the county road (Power Plant Ferry Road) and west of Fortress Butte Road
Section 13: S1/2NE1/4, S1/2SW1/4, SE1/4
Section 14: W1/2E1/2, W1/2, E1/2SE1/4, and those lands south and west of Fortress Butte Road in the E1/2NE1/4
Section 15: Those lands south and east of the Power Plant Ferry Road
Section 22: E1/2 and those lands east of the Power Plant Ferry Road in NW1/4, NE1/4SW1/4
Section 23: All
Section 24: All
Section 25: Lots 1, 3, N1/2, NE1/4SW1/4, SE1/4
Section 26: Lots 3, 4, NE1/4, N1/2NW1/4

T. 23 N., R. 23 E. Principal Meridian, Montana

Section 7: S1/2
Section 8: Those lands west of Hideaway Ridge Road in W1/2SW1/4
Section 17: S1/2S1/2 and those lands west of Hideaway Ridge Road in W1/2NW1/4, NW1/4SW1/4
Section 18: Lots 1, 2, 3, 4, W1/2E1/2, SE1/4NE1/4, E1/2W1/2, E1/2SE1/4 and those lands west of Hideaway Ridge Road in NE1/4NE1/4
Section 19: All
Section 20: All
Section 21: Those lands west of Antelope Ridge Road
Section 26: S1/2NW1/4, SW1/4
Section 27: S1/2N1/2, S1/2
Section 28: NW1/4NE1/4, S1/2NE1/4, NE1/4, S1/2, and those lands west and south of the 2,880 foot elevation contour, excluding Antelope Ridge Road
Section 29: All
Section 30: All
Section 31: Lots 1, 2, 3, 6, NE1/4, E1/2NW1/4, N1/2SE1/4, SE1/4SE1/4
Section 32: All
Section 33: All, excluding Antelope Ridge Road
Section 34: All
Section 35: W1/2, W1/2SE1/4, SE1/4SE1/4

Woodhawk WSA

T. 23 N., R. 21 E. Principal Meridian, Montana

Section 1: Lots 8, 9, S1/2SE1/4, and those lands east of Woodhawk Trail in Lot 6 and SW1/4
Section 11: SE1/4 and those lands south of Woodhawk Trail in NE1/4
Section 12: E1/2, SW1/4, and those lands south and east of Woodhawk Trail in the NW1/4
Section 13: All, excluding DeWaese Ridge Road
Section 14: E1/2, excluding DeWeese Ridge Road
Section 21: Those lands east of Woodhawk Trail in E1/2
Section 22: All
Section 23: All
Section 24: All
Section 25: N1/2 and those lands north of the DeMara Road in the S1/2
Section 26: N1/2, N1/2S1/2, and those lands north of the DeMars Road in the S1/2S1/2
Section 27: All
Section 28: SE1/4SE1/4 and those lands east of Woodhawk Trail in NE1/4, N1/2SE1/4
Section 34: Those lands north of the county road and west of DeMara Road in NE1/4, E1/2NW1/4
Section 35: Those lands north of DeMars Road in NW1/4NW1/4

T. 23 N., R. 22 E. Principal Meridian, Montana

Section 6: Lots 16, 17, 18, 19, 22, 23, 24, 25, 26, 27, 28, 33, & 34
Section 7: Lots 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 17, & 18
Section 8: Lot 2
Section 17: Lots 2, 3, SW1/4NW1/4
Section 18: Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, NE1/4, N1/2SE1/4
Section 19: Lots 3, 4, 5, and those lands west of DeMars Road in Lots 11 & 12

Cow Creek WSA

T. 23 N., R. 22 E. Principal Meridian, Montana

Section 1: Those lands excluding the Dead Cedar Road and north and west of the Power Plant Ferry Road
Section 2: All, excluding the Dead Cedar Road and including Dead Cedar Reservoir
Section 3: Lots 1 thru 20, N1/2S1/2, and those lands north of the Cow Island Recreation Road in the S1/2S1/2
Section 4: Lots 1 thru 20, N1/2, S1/2, and those lands north of the Cow Island Recreation Road in the S1/2S1/2
Section 5: Lots 1 thru 11, 14 thru 19, and those lands north of the Cow Island Recreation Road in the S1/2
Section 6: Lots 1 thru 10
Section 9: Those lands north of the Cow Island Recreation Road in the N1/2N1/2
Section 10: Those lands north and east of the Cow Island Recreation Road in the NE1/4NE1/4
Section 11: Those lands north of the Power Plant Ferry Road in the N1/2
Section 12: Those lands north and west of the Power Plant Ferry Road in the NW1/4

T. 23 N., R. 23 E. Principal Meridian, Montana

Section 6: Those lands north of the Power Plant Ferry Road in Lots 2, 3, 4, and excluding the Dead Cedar Road in Lot 4

T. 23 N., R. 21 E. Principal Meridian, Montana

Section 1: Lots 1, 2, & 7

T. 24 N., R. 22 E. Principal Meridian, Montana

Section 7: Lots 1, 2, 3, 7 thru 13, and those lands east of Badland Ridge Road in Lots 4, 5, 6, 14, & 15
Section 8: All
Section 9: All
Section 10: All
Section 11: Lot 4, SW1/4, and those lands west of Cabin Creek Road in Lot 3
Section 13: SW1/4NW1/4, S1/2
Section 14: All, excluding the Winter Ridge Road
Section 15: All, excluding the Winter Ridge Road
Section 17: All
Section 18: Lot 1, NE1/4, N1/2SE1/4, SE1/4SE1/4, and those lands east of Badland Ridge Road in Lot 2
Section 20: E1/2E1/2, NW1/4NE1/4, NE1/4NW1/4
Section 21: All
Section 22: All, excluding the Winter Ridge Road
Section 23: All, excluding the Winter Ridge Road
Section 24: All
Section 25: N1/2, N1/2S1/2, and those lands north of the Shetland Divide Road in the S1/2S1/2
Section 26: All, excluding the Winter Ridge Road to and including the reservoir in NE1/4SE1/4, Sec. 27
Section 27: All, excluding the Winter Ridge Road to and including the reservoir in NE1/4SE1/4, Sec. 27
Section 28: All
Section 29: E1/2E1/2
Section 32: NE1/4NE1/4
Section 33: All
Section 34: All
Section 35: All

T. 24 N., R. 23 E. Principal Meridian, Montana

Section 5: Lots 2, 3, SW1/4NE1/4, SE1/4NW1/4, E1/2SW1/4, NW1/4SE1/4, and those lands east of the Saskatchewan Butte Road in Lot 4, SW1/4NW1/4 and east of livestock maintenance road in W1/2SW1/4
Section 6: Lot 4
Section 7: All
Section 8: W1/2NW1/4, SW1/4
Section 17: W1/2W1/2, SE1/4SW1/4, S1/2SE1/4, and those lands south and east of the Shetland Divide Road in NE1/4SE1/4 and excluding the Shetland Divide Road in SE1/4SW1/4, SW1/4SE1/4
Section 18: All
Section 19: All, excluding the Shetland Divide Road
Section 20: All, excluding the Shetland Divide Road
Section 21: NW1/4NE1/4, S1/2NE1/4, NW1/4, S1/2, and those lands south and west of the livestock maintenance road in NE1/4NE1/4 and excluding Coyote Coulee Ridge Road
Section 22: SW1/4, S1/2SE1/4, and those lands south of the Coyote Coulee Road in S1/2NW1/4, SW1/4NE1/4, N1/2SE1/4, and lands between Coyote Coulee Road and livestock maintenance road in W1/2NW1/4
Section 26: Those lands north and west of Power Plant Ferry Road in NW1/4SW1/4
Section 27: W1/2E1/2, W1/2, N1/2SE1/4, and those lands north and west of the Power Plant Ferry Road in the S1/2SE1/4
Section 28: All
Section 29: All
Section 30: All
Section 31: All
Section 32: N1/2, N1/2S1/2, and those lands north and west of the Power Plant Ferry Road in the S1/2S1/2
Section 33: N1/2, N1/2SW1/4, and those lands north of the Power Plant Ferry Road in the SW1/4SW1/4, N1/2SE1/4
Section 34: N1/2NW1/4

T. 25 N., R. 21 E. Principal Meridian, Montana

Section 1: Those lands less than the 3,200 foot elevation contour
Section 2: Those lands less than the 3,200 foot elevation contour
Section 11: Those lands east of Spencer Cow Camp Road
Section 12: S1/2NE1/4NE1/4, SE1/4NE1/4, SW1/4NW1/4, S1/2, and those lands lower than the 3,200 foot elevation contour in N1/2NE1/4NE1/4, W1/2NE1/4, N1/2NW1/4, SE1/4NW1/4
Section 13: N1/2, SE1/4, and those lands north and east of Badland Ridge Road in the SW1/4
Section 24: Those lands east of the Badland Ridge Road
Section 25: Those lands east of the Badland Ridge Road

T. 25 N., R. 22 E. Principal Meridian, Montana

Section 6: S1/2SW1/4SW1/4, SE1/4SW1/4, S1/2NE1/4SE1/4, SE1/4NW1/4SE1/4, S1/2SE1/4, and those lands below the 3,200 foot elevation contour in the SW1/4NW1/4, Lot 4
Section 7: All, excluding Squaw Creek Road
Section 8: NW1/4NW1/4
Section 17: W1/2NE1/4, SE1/4NE1/4, W1/2, SE1/4, excluding Squaw Creek Road in W1/2SW1/4
Section 18: All, excluding Squaw Creek Road
Section 19: All, excluding Squaw Creek Road
Section 20: All, excluding Squaw Creek Road
Section 26: Those lands west of Cabin Creek Road in W1/2
Section 27: E1/2
Section 28: NW1/4NE1/4, NE1/4NW1/4, W1/2W1/2
Section 29: All
Section 30: All, excluding Squaw Creek Road in NE1/4NE1/4
Section 31: All
Section 32: All
Section 33: S1/2SW1/4
Section 34: All

T. 25 N., R. 23 E. Principal Meridian, Montana

Section 31: Those lands east of the Saskatchewan Butte Road in the E1/2SW1/4

T. 26 N., R. 21 E. Principal Meridian, Montana

Section 35: Those lands below the 3,200 foot elevation contour in the S1/2S1/2

Burnt Lodge WSA

T. 23 N., R. 33 E. Principal Meridian, Montana

Section 1: Lots 1, 2, 3, S1/2NE1/4, SE1/4NW1/4, N1/2SE1/4
Section 10: S1/2NE1/4, N1/2SE1/4
Section 11: NE1/4NE1/4, S1/2N1/2, N1/2SW1/4, SE1/4SW1/4, SE1/4
Section 12: W1/2NW1/4, S1/2
Section 13: All
Section 14: E1/2E1/2, NW1/4NE1/4, NE1/4NW1/4, SW1/4SE1/4
Section 21: S1/2SW1/4
Section 22: SE1/4SW1/4, S1/2SE1/4
Section 23: NE1/4, S1/2
Section 24: All
Section 25: All
Section 26: All
Section 27: E1/2, S1/2NW1/4, SW1/4
Section 28: E1/2, NE1/4NW1/4, N1/2SW1/4, SE1/4SW1/4
Section 29: SE1/4NE1/4, NE1/4SE1/4
Section 32: S1/2N1/2, NE1/4NW1/4, and those lands east of Ball Rock Road in the NE1/4SW1/4, SE1/4
Section 33: E1/2, S1/2NW1/4, SW1/4
Section 34: All

T. 23 N., R. 34 E. Principal Meridian, Montana

Section 4: Those lands south and west of Plum Creek Road
Section 5: Those lands south and west of Plum Creek Road
Section 6: All
Section 7: All
Section 8: All
Section 9: Those lands south and west of Plum Creek Road
Section 10: Those lands south and west of Plum Creek Road
Section 15: Those lands south and west of Plum Creek Road
Section 17: All
Section 18: Lots 1, 2, 3, 4, NE1/4, E1/2NW1/4, NE1/4SW1/4, E1/2SE1/4, NW1/4SE1/4
Section 19: Lots 1, 2, 3, 4, S1/2NE1/4, E1/2W1/2, SE1/4
Section 20: W1/2NE1/4, E1/2NW1/4

T. 24 N., R. 34 E. Principal Meridian, Montana

Section 31: Those lands south of Plum Creek Road in the S1/2N1/2, S1/2
Section 32: Those lands south of Plum Creek Road in the SW1/4SW1/4

Bridge Coulee WSA

T. 17 N., R. 30 E. Principal Meridian, Montana

Section 4: Those lands south of the Smith Ridge Road in the SW1/4
Section 5: Those lands south of the Smith Ridge Road in the S1/2
Section 6: Those lands south of the Smith Ridge Road in the S1/2S1/2
Section 7: Lots 2, 3, 4, NE1/4NE1/4, S1/2NE1/4, SE1/4NW1/4, E1/2SW1/4, SE1/4
Section 8: All
Section 9: W1/2, W1/2SE1/4, SE1/4SE1/4, and those lands south of Smith Ridge Road in NE1/4SE1/4
Section 10: Those lands south and west of Smith Ridge Road in the W1/2SW1/4
Section 15: Those lands west of Smith Ridge Road in the N1/2NW1/4
Section 17: All
Section 18: All
Section 19: E1/2, E1/2NW1/4, and those lands east of county road in Lots 1, 2, NE1/4SW1/4
Section 20: All
Section 21: N1/2, N1/2S1/2, and those lands north of Bridge Ridge Road in S1/2S1/2
Section 28: Those lands north of Bridge Ridge Road in N1/2NE1/4 and west of said road in W1/2W1/2
Section 29: N1/2, SW1/4, and those lands north and west of Bridge Ridge Road in SE1/4
Section 30: N1/2NE1/4, SE1/4NE1/4, and those lands east of county road and Bridge Ridge Road in SE1/4
Section 31: Those lands north and east of Bridge Ridge Road in NE1/4NE1/4
Section 32: Those lands north of Bridge Ridge Road in N1/2

Musselshell Breaks WSA

T. 15 N., R. 30 E. Principal Meridian, Montana

Section 1: N1/2SW1/4 and those lands south and west of county road in Lots 7 & 8, S1/2NW1/4
Section 2: Lots 5, 6, 7, 8, SW1/4NE1/4, S1/2NW1/4, SW1/4, W1/2SE1/4
Section 3: All
Section 4: All
Section 9: Lots 1, 2, & 3
Section 10: N1/2, N1/2NE1/4SW1/4, and those lands east of Williams Ridge Road in SE1/4
Section 11: N1/2, N1/2S1/2, SE1/4SW1/4, S1/2SE1/2, and those lands north and east of Williams Ridge Road in SW1/4SW1/4
Section 12: S1/2NE1/4, SW1/4NW1/4, N1/2SW1/4, SE1/4
Section 14: Those lands north of Williams Ridge Road in N1/2

T. 15 N., R. 31 E. Principal Meridian, Montana

Section 7: Lots 8, 9, E, and those lands west of the county road in Lots 7, 10 & D
Section 18: Lots 6, 7, 8, 9, and those lands west of county road in Lot 5 and north of Williams Ridge Road in Lot 10

T. 16 N., R. 30 E. Principal Meridian, Montana

Section 15: Those lands south of Haley Ridge Road in SW1/4SW1/4
Section 20: Lots 1, 11, 12, & 22
Section 21: E1/2, E1/2NW1/4, SW1/4NW1/4, SW1/4
Section 22: Those lands south of Haley Ridge Road
Section 23: Those lands south of Haley Ridge Road and west of county road
Section 26: W1/2W1/2, SE1/4NW1/4, and those lands south and west of county road in NW1/4NE1/4, NE1/4NW1/4
Section 27: All
Section 28: Lots 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 15, 16, 17, & 18
Section 29: Lots 1, 20, and those lands in W1/2 Lot 18
Section 32: Lot 7, NE1/4SE1/4
Section 33: All
Section 34: All
Section 35: W1/2NW1/4, SW1/4, SW1/4SE1/4, and those lands south and west of Shell Ridge Road in SE1/4SE1/4

Billy Creek WSA

T. 21 N., R. 34 E. Principal Meridian, Montana

Section 1: All
Section 2: Lots 1, 2, 3, 4, S1/2N1/2, excluding ridge road in Lot 4, SW1/4NW1/4
Section 3: Lots 1, 3, 3, 4, S1/2N1/2, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4, excluding ridge road in Lot 1, SE1/4NE1/4, and ridge road in SW1/4NW1/4
Section 4: All, excluding ridge road in NE1/4
Section 5: Those lands east of Billy Creek Road
Section 8: NE1/4NE1/4
Section 9: All
Section 10: W1/2NW1/4

T. 21 N., R. 35 E. Principal Meridian, Montana

Section 6: Lots 2, 3, 4, 5, 6, SW1/4NE1/4, SE1/4NW1/4, excluding the ridge road in Lots 2, 3, SW1/4NE1/4, SE1/4NW1/4

Seven Blackfoot WSA

T. 20 N., R. 33 E. Principal Meridian, Montana

Section 1: All
Section 2: All
Section 3: Lot 1, SE1/4NE1/4, E1/2SE1/4
Section 12: N1/2NE1/4, SW1/4NE1/4, NE1/4NW1/4

T. 20 N., R. 34 E. Principal Meridian, Montana

Section 1: SE1/4SW1/4
Section 2: Lots 3, 4, SW1/4NE1/4, S1/2NW1/4, SW1/4, SE1/4SE1/4
Section 3: All
Section 4: All
Section 5: All
Section 6: Lots 1 thru 9, 11, 12, 13, 14, E1/2SW1/4
Section 7: Lot 1, NE1/4NW1/4
Section 8: NE1/4NE1/4
Section 9: All
Section 10: All
Section 11: N1/2NE1/4, SW1/4NE1/4, W1/2
Section 12: NE1/4, N1/2NW1/4
Section 14: W1/2
Section 15: All
Section 23: NW1/4, E1/2SW1/4, SW1/4SE1/4

T. 20 N., R. 35 E. Principal Meridian, Montana

Section 7: Lot 1 and those lands west of county road in NE1/4NW1/4

T. 21 N., R. 33 E. Principal Meridian, Montana

Section 8: E1/2
Section 17: E1/2, S1/2NW1/4, SW1/4
Section 18: Those lands east of Herman Ridge Road in SE1/4NE1/4
Section 20: NE1/4, N1/2NW1/4
Section 21: N1/2 and those lands north of county road in N1/2SW1/4, NW1/4SE1/4
Section 22: N1/2, SE1/4
Section 23: All
Section 24: N1/2, SW1/4, W1/2SE1/4, excluding Seven Blackfoot Trail in NE1/4
Section 25: W1/2NE1/4, SE1/4NE1/4, W1/2, SE1/4 excluding North Sawmill Creek Road
Section 26: All, excluding North Sawmill Creek Road
Section 27: NE1/4NE1/4, S1/2N1/2, N1/2SW1/4, SE1/4SW1/4, SE1/4 excluding North Sawmill Creek Road in W1/2NE1/4
Section 33: SE1/4SW1/4, S1/2SE1/4
Section 34: E1/2, E1/2NW1/4, SW1/4
Section 35: All

T. 21 N., R. 34 E. Principal Meridian, Montana

Section 5: Those lands west of Billy Creek Road
Section 8: NW1/4NW1/4, S1/2NW1/4, SW1/4
Section 17: W1/2, NW1/4SE1/4, and those lands west of Billy Creek Road in W1/2NE1/4
Section 19: Lots 1, 2, 3, E1/2, E1/2W1/2, and those lands north and east of Seven Blackfoot Trail in Lot 4
Section 20: E1/2NE1/4, W1/2, SE1/4SE1/4
Section 21: SW1/4NW1/4, W1/2SW1/4, SW1/4SE1/4, and those lands south and west of Billy Creek Road in N1/2NW1/4
Section 27: Those lands south and west of Billy Creek Road in S1/2NW1/4, NE1/4SW1/4
Section 28: All
Section 29: All
Section 30: Lots 3, 4, NE1/4, NE1/4NW1/4, N1/2SE1/4, SE1/4SE1/4
Section 31: All, excluding Seven Blackfoot Trail
Section 32: All, excluding Seven Blackfoot Trail
Section 33: W1/2, W1/2SE1/4, SE1/4SE1/4, excluding Seven Blackfoot Trail
Section 34: SW1/4SW1/4

Terry Badlands WSA

T. 12 N., R. 48 E. Principal Meridian, Montana

Section 12: E1/2
Section 24: NE1/4, NE1/4SE1/4

T. 12 N., R. 49 E. Principal Meridian, Montana

Section 1: All
Section 2: All
Section 4: SW1/4NE1/4, SW1/4NW1/4, SW1/4, W1/2SE1/4
Section 5: All
Section 6: All
Section 7: All
Section 8: All
Section 9: All
Section 10: All, excluding Calypso Trail in NE1/4NE1/4
Section 12: All, excluding Calypso Trail in SW1/4SW1/4
Section 13: All, excluding Calypso Trail in N1/2
Section 14: All
Section 15: All
Section 17: All
Section 18: All
Section 19: All
Section 20: All
Section 21: All
Section 22: All
Section 23: All
Section 24: All
Section 26: N1/2
Section 28: N1/2
Section 29: All
Section 30: All
Section 31: All
Section 32: All
Section 33: N1/2, SW1/4
Section 34: All
Section 35: All

T. 13 N., R. 49 E. Principal Meridian, Montana

Section 26: South of existing road running thru N1/2
Section 34: All
Section 35: All

T. 11 N., R. 49 E. Principal Meridian, Montana

Section 1: All
Section 2: All
Section 3: Lots 1, 2, 3, 4, S1/2N1/2, SW1/4, W1/2SE1/4
Section 4: All
Section 6: Lots 1, 2, 4, 5, 6, SW1/4NE1/4, and those lands north of Custer Creek Road in Lot 3, SE1/4NW1/4
Section 9: Those lands north and east of Custer Creek Road
Section 10: All
Section 11: All
Section 12: E1/2
Section 13: All
Section 14: E1/2, N1/2SW1/4, SE1/4SW1/4
Section 15: Those lands north and east of Custer Creek
Section 22: Those lands north and east of Custer Creek in NE1/4
Section 23: Those lands north of Custer Creek
Section 24: NW1/4NE1/4, SE1/4NE1/4, N1/2NW1/4, and those lands north of Custer Creek in SW1/4NE1/4, S1/2NW1/4

T. 11 N., R. 50 E. Principal Meridian, Montana

Section 6: Lots 2, 3, 4, 5, 6, 7, SW1/4,NE1/4 SE1/4NW1/4, E1/2SW1/4, NW1/4SE1/4
Section 18: Lots 1, 2, 3, NE1/4NW1/4, and those lands west of existing road in Lots 5, 6, NW1/4NE1/4, SE1/4NW1/4
Section 19: Lots 1, 2, west of existing road

T. 12 N., R. 50 E. Principal Meridian, Montana

Section 1: All
Section 2: All, excluding Terry Scenic Overlook Road in Lot 2
Section 3: All
Section 4: All
Section 5: All
Section 6: All
Section 7: All
Section 8: All
Section 9: All
Section 10: All
Section 11: All
Section 12: All
Section 14: Lots 5, 6, 7, 8, N1/2N1/2
Section 15: Lots 3, 4, 5, 6, 7, N1/2NE1/4, NW1/4, W1/2SW1/4
Section 18: All, excluding Calypso Trail
Section 20: All, excluding Calypso Trail
Section 21: All, excluding Calypso Trail
Section 22: Lot 4
Section 28: Those lands west county road and railroad R/W in Lots 2, 3, W1/2, NW1/4SE1/4, excluding Calypso Trail
Section 29: All
Section 30: All
Section 31: All
Section 32: W1/2NE1/4, E1/2SW1/4, W1/2SE1/4, and those lands west of existing road in E1/2E1/2
Section 33: Those lands north and west of existing road in Lots 1, 2, NW1/4, and excluding patent lands

T. 13 N., R. 50 E. Principal Meridian, Montana

Section 30: Lot 7 and those lands south of existing road in Lots 5, 6, SE1/4SW1/4, S1/2SE1/4
Section 31: Lots 1, 2, 3, 4, S1/2NE1/4, E1/2W1/2, SE1/4, and those lands south of existing road in N1/2NE1/4
Section 32: Those lands south of existing road in N1/2
Section 34: Those lands south of existing road in S1/2

T. 12 N., R. 51 E. Principal Meridian, Montana

Section 6: All

Source: BLM, 1981

APPENDIX 3.1: COMMON ANIMAL SPECIES IN THE WSAs

Common Name	Scientific Name
Big Game	
Mule deer	Odocoileus hemionus
White-tailed deer	Odocoileus virginianus
Pronghorn antelope	Antilcapra americana
Rocky Mountain elk	Cervus canadensis
Upland Game Birds	
Sage grouse	Centrocercus urophasianus
Sharp-tailed grouse	Pedioectes phasianellus
Ring-necked pheasant	Phasianus colchicus
Hungarian (gray) partridge	Perdix perdix
Merriam turkey	Meleagris gallopauo
Waterfowl	
Canada geese	Branta canadensis
Killdeer	Charadrius vociferus
American avocet	Recurvirostra americana
Mallard	Anas platyrhynchos
Pintail	Anas acuta
Gadwall	Anas strepera
Blue-winged teal	Anas discors
Fur-Bearing Mammals	
Coyote	Canis latrans
Muskrat	Ondatra zibethica
Beaver	Castor conadensis
Badger	Taxidea taxus
Bobcat	Lynx rufus
Mountain lion	Felis concolor
Skunk	Mephitis mephitis
Mink	Mustela vison
Weasel	Mustela spp.
Raccoon	Procyon lotor
Fox	Vulpes fulva
Fisheries	
Sauger	Stizostedion canadense
Channel catfish	Ictalurus punctatus
Paddlefish	Polyodon spathula
Walleye	Stizostedion vitreum
Threatened or Endangered Species	
Bald eagle	Hallaeetus leucocephalus

Source: BLM, 1981

APPENDIX 3.2: SOIL MAPPING UNITS OF THE WSAs

All WSAs are very similar in soil and watershed characteristics. The following list of key soil mapping units shows the similarity of soils for all 12 WSAs. Analysis of the Soil and Watershed Alternatives (Chapter 4) was made with the following assumptions:

1. Soil and watershed recover from surface disturbances very slowly.
2. Natural geologic erosion in all the WSAs is the most influential factor affecting soil erosion, sediment production and water quality.
3. The accelerated erosion caused by livestock grazing, construction and maintenance of watering facilities, motorized vehicle use and mineral exploration and development are all very minimal compared to the natural geologic erosion.
4. Livestock grazing, along with other uses will continue, to a certain extent, throughout the study and may continue if an area is designated wilderness.

STAFFORD - Soil Mapping Units

Blaine County	Percent Slopes	Percent of Area
49 - Shale outcrop	35-80	40
67B - Marmarth clay loam	0-4	2
101 - Ustic Torrifluvents, wet	0-2	1
150 - Cabbart-Delpoint loams	8-35	3
167 - Marmarth-Cabbart	2-8	3
350 - Cabbart-Rock outcrop, shale	25-60	28
519 - Yamac-Benz	0-4	10

Chouteau County	Percent Slopes	Percent of Area
3 - Lisam-Rock outcrop, shale	8-45	3
8 - Cabbart-Rock outcrop, shale	25-60	1
10 - Badland		5
16 - Bascovy-Neldore	25-50	2
23 - Ustic Torriorthents-Ustic Torrifluvents	0-8	1
24 - Benz	2-6	1

ERVIN RIDGE - Soil Mapping Units

Blaine County	Percent Slopes	Percent of Area
46 - Neldore-Dilts-Rock outcrop	25-60	28
49 - Shale outcrop	35-80	30
145 - Bascovy clay	2-8	7
146 - Neldore-Dilts clay	8-35	4
346 - Rock outcrop, shale-Lisam	25-70	1
350 - Cabbart-Rock outcrop, shale	25-60	25
519 - Yamac-Benz	0-4	5

COW CREEK - Soil Mapping Units

Blaine County	Percent Slopes	Percent of Area
19 - Havre Loam	0-2	1
46 - Neldore-Dilts-Rock outcrop	25-60	11
49 - Shale outcrop	35-80	12
101 - Ustic Torrifluvents, wet	0-2	3
145 - Bascovy clay	2-8	2
146 - Neldore-Dilts clay	8-35	1
150 - Cabbart-Delpoint loams	8-35	1
161C - Twilight-Riedel fine sandy loam	4-8	1
161D - Twilight-Riedel fine sandy loam	8-20	1
167 - Marmarth-Cabbart	2-8	1
245 - Bascovy-Neldore	2-8	1
326 - Marvan-Vascovy clays	2-8	2
350 - Cabbart-Rock outcrop, shale	25-60	5
446 - Lisam-Wabek	25-45	1
519 - Yamac-Benz	0-4	1

Phillips County	Percent Slopes	Percent of Area
3 - Dilts-Rock outcrop, shale-forested	35-60	18
5 - Bascovy-Dilts-Weingart	8-25	3
7 - Bascovy	2-8	3
8 - Dilts-Rock outcrop, shale	25-70	5
9 - Dilts-Bascovy	15-45	3
10 - Dilts-Cabbart-Rock outcrop, sandstone	35-60	8
11 - Harlem-Marvan	0-4	4
13 - Elloam-Tealetta	0-4	2
14 - Elloam-Thoeny	0-6	3
17 - Cabbart-Twilight	15-35	4
18 - Twilight-Cabbart	4-15	3

ANTELOPE CREEK - Soil Mapping Units

Phillips County	Percent Slopes	Percent of Area
1 - Rock outcrop, shale-Dilts	35-75	16
3 - Dilts-Rock outcrop, shale-forested	35-60	25
4 - Vaeda	1-8	3
5 - Bascovy-Dilts-Weingart	8-25	2
8 - Dilts-Rock outcrop, shale	25-70	12
9 - Dilts-Bascovy	15-45	4
10 - Dilts-Cabbart-Rock outcrop, sandstone	35-60	16
11 - Harlem-Marvan	0-4	5
14 - Elloam-Thoeny	0-6	5
17 - Cabbart-Twilight	15-35	6
18 - Twilight-Cabbart	4-15	2
27 - Sunburst-Dilts	15-45	4

BURNT LODGE - Soil Mapping Units

Phillips County	Percent Slopes	Percent of Area
1 - Rock outcrop, shale-Dilts	35-75	15
3 - Dilts-Rock outcrop, shale-forested	35-60	13
8 - Dilts-Rock outcrop, shale	25-70	9
10 - Dilts-Cabbart-Rock outcrop, sandstone	35-60	4
17 - Cabbart-Twilight	15-35	4
18 - Twilight-Cabbart	4-15	3
27 - Sunburst-Dilts	15-45	2

Valley County	Percent Slopes	Percent of Area
18 - Ustic Torrifluvents	0-2	3
41E - Cabbart-Delpoint	9-35	8
48E - Lisam-Dilts	5-35	7
100E - Rock outcrop		9
148E - Lisam-Dilts-Rock outcrop	9-35	15
200F - Badland		8

DOG CREEK - Soil Mapping Units

Fergus County	Percent Slopes	Percent of Area
118C - Tanna-Abor	2-8	5
227D - Yamac-Delpoint-Yawdim	4-25	6
300 - Rock outcrop		55
803A - Havre loam	0-2	1
803C - Yamac loam	2-8	5
814C - Kobar silty clay loam	2-8	5
816E - Kobar silty clay loam, gullied	2-25	5
949E - Abor-Thebo-Crago	15-45	10
1072E- Neldore-Thebo clays	25-60	1
1105 - Havre and Harlem-occasionally flooded	0-2	3
1127C- Delpoint-Yawdim	4-8	3
1527F- Yawdim-Delpoint-Rock outcrop	25-50	1

WOODHAWK - Soil Mapping Units

Fergus County	Percent Slopes	Percent of Area
227D - Yamac-Delpoint-Yawdim	4-25	1
278C - Cerdrum-Absher	2-8	1
300 - Rock outcrop		16
370C - Neldore-Thebo clays	4-25	1
470F - Neldore-Rock outcrop	15-60	54
472C - Thebo clay	2-8	1
472D - Thebo clay	8-25	1
570B - Marias silty clay	2-8	1
803C - Yamac loam	2-8	2
814C - Kobar silty clay loam	2-8	2
816E - Kobar silty clay loam, gullied	2-25	1
1105 - Havre and Harlem, occasionally flooded	0-2	5
1803A- Havre silty clay loam	0-2	2
2043C- Marmarth-Cabbart loams	4-8	1
2470F- Dilts-Julin-Rock outcrop	15-60	12

SEVEN BLACKFOOT - Soil Mapping Units

Carfield County	Percent Slopes	Percent of Area
4 - Yamac-Cerdrum	4-12	1
7 - Badlands-Lambeth	25-70	47
14 - Ustic Torrifluvents-Borollic Camborthids	0-10	6
15 - Evanston-Ethridge	0-10	2
16 - Cabbart-Lambeth-Yawdim	35-70	10
17 - Lambeth-Riedel-Busby	20-50	2
18 - Lambeth-Dilts-Busby	15-60	6
20 - Lambeth-Badlands-Yawdim	25-70	22
23 - Evanston-Gerdrum-Cabbart	8-25	4

BILLY CREEK - Soil Mapping Units

Carfield	Percent Slopes	Percent of Area
4 - Yamac-Gerdrum	4-12	6
7 - Badlands-Lambeth	25-70	27
15 - Evanston-Ethridge	0-10	6
16 - Cabbart-Lambeth-Yawdim	35-70	6
17 - Lambeth-Riedel-Busby	20-50	12
20 - Lambeth-Badlands-Yawdim	25-70	25
23 - Evanston-Cerdrum-Cabbart	8-25	18

Source: BLM, 1981

BRIDGE COULEE - Soil Mapping Units

Carfield	Percent Slopes	Percent of Area
15 - Evanston-Ethridge	0-10	5
17 - Lambeth-Riedel-Busby	20-50	25
18 - Lambeth-Dilts-Busby	15-60	10
20 - Lambeth-Badlands-Yawdim	25-70	35
22 - Kevin-Scobey	8-15	10
23 - Evanston-Cerdrum-Cabbart	8-25	15

TERRY BADLANDS - Soil Mapping Units

Prairie County	Percent Slopes	Percent of Area
2 - Archin-Gerdrum, channeled	0-8	1
3 - Armells-Delpoint-Yamac	15-70	2
6 - Badland		40
7 - Lisam-Rock outcrop-Cabbart	15-70	2
9 - Bonfri-Evanston	2-8	2
12 - Cabbart-Rock outcrop-Yawdim	15-70	8
13 - Camborthids-Torrifluvents	0-8	4
15 - Delpoint-Cabbart	8-25	1
16 - Gerdrum-Archin-Rock outcrop	4-20	4
17 - Delpoing-Cabbart-Yawdim	15-60	5
21 - Gerdrum-Creed	0-8	3
24 - Kremlin	0-4	3
28 - Lonna	0-8	1
29 - Lonna-Cambeth-Cabbart	4-20	2
34 - Yamac	0-8	1
35 - Yamac-Delpoint-Cabbart	4-20	1
36 - Yamac-Birney-Delpoint	4-25	1
37 - Yamac-Busby-Blackhall	4-15	4
38 - Alona	0-4	2
41 - Lisam-Rock outcrop-Abor	15-70	6
44 - Yamac-Cerdrum	4-15	7

MUSSELSHELL BREAKS - Soil Mapping Units

Carfield County	Percent Slopes	Percent of Area
7 - Badlands-Lambeth	25-70	16
14 - Ustic Torrifluvents-Borollic Camborthids	0-10	4
15 - Evanston-Ethridge	0-10	4
17 - Lambeth-Riedel-Busby	20-50	18
18 - Lambeth-Dilts-Busby	15-60	10
20 - Lambeth-Badlands-Yawdim	25-70	30
23 - Evanston-Cerdrum-Cabbart	8-25	18

APPENDIX 3.3: COMMON PLANT SPECIES IN THE WSAs

Grass and Grasslike

Common Name	Scientific Name
bluebunch wheatgrass	Agropyron apicatum
thickspike wheatgrass	Agropyroo dasystachyum
western wheatgrass	Agropyroo smithii
little blueatem	Andropogoo scopariua
aideoats grama	Bouteloua curtipendlula
prairie sandreed	Calamovilfa longfolia
basin wildrye	Elymua cinereus
prairie Junegrass	Koeleria criatata
plains muhly	Muhlenbergia cuspidata
alkali aacaton	Sporobolus arioidea
alkali cordgrass	Spartina gracilis
needleandthread	Stipa comata
green needlegrass	Stipa viridula

Half Shrub and Forb

- milkvetch	Astragalus spp.
+ Russian knapweed	Ceotavrea repeos
- water hemlock	Cicuta douglasii
+ Canada thistle	Cirsium arvense
- poison hemlock	Conium maculatum
+ field bindweed	Convolvulua arvensis
- low larkspur	Desphinium bicolor
+ leafy spurge	Euphorbia esula
- halogeton	Halogeton glomeratus
+ dalmation toadflax	Linaria dalmatica
- white pointloco	Oxytropia app.
* persistent sepal yellowcress	Rorippa calycina
American vetch	Vicia americana
- deathcamas	Zygadenus spp.
- cockleburr	Xantium spp.

Shrubs and Trees

big sagebrush	Artemiaia tridentata
shadescale saltbush	Atriplix confertifolia
Nuttall saltbush	Atriplix nattallii
creeping juniper	Juniperus horizontalia
Rocky Mountain juniper	Juniperus scopulorum
limber pine	Pinus flexilis
- ponderosa pine	Pinus ponderosa
Douglas fir	Pseudotsuga menziesii glauca
- chokecherry	Pruous virginiana
- greasewood	Sarcobatus vermiculatus

* Sensitive
+ Noxious
- Poisonous

Source: BLM, 1981

APPENDIX 3.4: PREVIOUS INVESTIGATIONS IN OR NEAR WILDERNESS STUDY AREAS

Study/Date	Nature	Agency	Dog Creek	Stafford	Ervin Ridge	Woodhawk	Cow Creek	Antelope Creek	Bridge Coulee	Musselshell Breaks	Seven Blackfoot	Billy Creek	Burnt Lodge	Terry Badlands	Remarks
Lewis & Clark, 1805	General	Dept. of War	X	X	X	X	X	X							
Dr. Fred Hayden, 1854	Geology			X				X							Wrote "Geology of the Upper Missouri Valley" (1871)
(F.B. Meek)	Paleontology			X			X	X							Added section on invertebrate fossils to above
Fred Calhoun, 1901	Glacial Geology			X			X	X							See "Colton, Lemke and Lindvall" below
Rogers, 1913	Coal Reserves													X	Little Sheep Mountain Coal Field report includes Terry Badlands
Reeves, 1914	Petroleum Reserves	USGS		X			X	X							Mapping for petroleum potential
Lupton & Lee, 1921	Petroleum Reserves								X	X					Cat Creek Anticline
Reeves, 1927	Petroleum Reserves	USGS							X	X					Cat Creek Anticline
Missouri River Basin Studies, 1944	Geology/Mineral	USGS USBM		X			X	X							Part of Flood Control Act, 1944
Hadley, 1956	Petroleum Reserves								X	X					Cat Creek Anticline
Colton, Lemke, Lindvall, 1961	Glacial Geology			X											Compiled "Glacial Map of Montana East of the Rocky Mountains" from work of Calhoun and others
Jensen & Varnes, 1964	Geology										X	X	X		Fort Peck area geology
Johnson & Smith, 1964	Geology	USGS							X	X					USGS Bulletin on geology of Winnett-Mosby area includes Musselshell Breaks and comes within 1 mile of Bridge Coulee
Hearn, 1976	Geology Coal Reserves	USGS					X	X							Geology and structure of the Bears Paw Mountains
Cook, 1976	Coal Reserves													X	Custer Creek KRCRA report includes SW part of WSA
Frahme, Rice, Miller, Schumacher, Hamilton and Rigby, 1979	Minerals			X			X	X	X	X	X	X	X		Minerals on the CMR National Wildlife Refuge
Rice, 1980				X			X	X							Shallow gas accumulations along the Bears Paw Mountains
Clemens, 1980	Paleontology										X	X			Studies in the Hell Creek Formation between Seven Blackfoot and Big Dry Creeks
Stoner and Lewis, 1980									X		X	X	X		Fort Union Coal Region

Source: BLM, 1981

APPENDIX 3.5: POPULATION CHARACTERISTICS

	Blaine	Phillips	Valley	Fergus	Garfield	Prairie	State
1980 Population[1]	6,999	5,367	10,250	13,076	1,656	1,836	786,690
Population Change 1970–1980[1]	4.0	-0.4	-10.6	3.7	-7.8	4.8	13.3
Population Change 1960–1970[1]	-16.9	-10.6	-32.8	-10.0	-9.3	-24.4	2.9
Net Migration 1970–1979[2]	2.4	-2.5	-9.4	10.5	-18.3	5.7	5.5
Net Migration 1960–1970[3]	-27.9	-19.6	-55.8	-19.1	-18.6	-28.6	-8.7
Persons Per Square Mile, 1980[1]	1.6	1.0	2.1	3.0	0.4	1.0	5.4
Projected Population 1990[4]	6,800	5,300	9,900	13,300	1,600	1,700	859,900

SOURCES:

[1] U.S. Department of Commerce, Bureau of the Census, Montana Number of Inhabitants, 1980.

[2] University of Montana, Bureau of Business and Economic Research, Personal Communication, November 1981.

[3] U.S. Department of Commerce, Bureau of the Census, County and City Data Book, 1977.

[4] State of Montana Department of Administration, Research and Information Systems Division, Montana Population Projections, November 1980.

APPENDIX 3.6: SOCIAL WELL-BEING

	Blaine	Phillips	Valley	Fergus	Carfield	Prairie	State
Population Aged 17 or less (%), 1980[1]	34.4	31.1	32.2	28.3	30.1	28.9	29.5
Population Aged 18 to 64 (%), 1980[1]	53.5	55.2	56.5	55.5	59.0	53.2	59.8
Population Aged 65 or More (%), 1980[1]	12.1	13.7	11.3	16.2	10.9	17.9	10.7
Persons Per Physician, 1975[2]	6,815	2,694	1,855	1,077	1,544	No Physicians	869
Median No. of School Years Completed, 1970[3]	12.0	12.2	12.2	12.3	12.1	12.2	12.3
Crime Rate Per 100,000 Population, 1979[4]	998.4	1,497.5	2,797.0	3,650.7	998.3	893.3	4,437.7
Per Capita Income $, 1979[5]	4,840	6,148	6,051	7,071	5,736	5,562	7,528
Unemployment Rate, 1980[6]	8.3	3.8	5.2	4.7	3.0	2.8	6.0
Divorce Rate, 1975[2]	2.6	3.2	4.0	5.8	1.1	0.5	5.7
Housing Lacking Complete Plumbing for Exclusive Use (%), 1980[1]	6.0	5.7	3.7	4.6	6.8	7.2	3.4
Change in No. of Farms and Ranches (%), 1969-1978[7]	-11.9	-0.2	2.5	-11.4	-8.5	-13.1	
Change in Average Size Farms and Ranches (%), 1969-1978[7]	19.1	14.1	10.7	11.7	-4.6	24.7	

SOURCES:

[1] U.S. Department of Commerce, Bureau of the Census, Montana Number of Inhabitants, 1980.
[2] U.S. Department of Commerce, Bureau of the Census, County and City Data Book, 1977.
[3] U.S. Department of Commerce, Bureau of the Census, Montana General Social and Economic Characteristics, 1970.
[4] Montana Board of Crime Control, Criminal Justice Data Center, Crime in Montana, 1979, Annual Report, June 1980.
[5] U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, April 1981.
[6] State of Montana, Department of Labor and Industry, Employment Security Division, 1981.
[7] U.S. Department of Commerce, Bureau of the Census, 1969 and 1978 Census of Agriculture, October 1980.

APPENDIX 3.7: COUNTY EMPLOYMENT BY SOURCE

	Blaine			Phillips			Valley			Fergus			Garfield			Prairie		
Source	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79
Proprietors																		
Agriculture	515 19.2	467 15.7	-7.6	577 25.4	523 21.4	-9.4	816 14.1	738 14.8	-9.6	912 16.9	825 13.7	-9.5	259 31.4	235 31.0	-9.3	234 26.6	212 25.3	-9.4
Non-Agriculture	253 9.4	300 10.1	18.6	212 9.3	244 10.0	15.1	433 7.5	500 10.0	15.5	569 10.6	633 10.5	11.2	72 8.7	80 10.6	11.1	67 7.6	81 9.7	20.9
Wage and Salary																		
Agriculture	286 10.7	233 7.9	-18.5	325 14.3	264 10.8	-18.8	337 5.8	274 5.5	-18.7	394 7.3	322 5.4	-18.3	126 15.3	102 13.5	-19.0	99 11.2	81 9.7	-18.2
Ag. Services, Forestry, Fisheries, and Others	23 0.9	D -	-	18 0.8	D -	-	21 0.4	D -	-	53 1.0	27 0.4	-49.1	L -	D -	-	10 1.1	25 3.0	+150.0
Mining	4 0.1	D -	-	1 0.0	D -	-	9 0.2	D -	-	51 0.9	5 0.1	-90.2	L -	D -	-	0 0.0	0 0.0	-0.0
Construction	76 2.8	94 3.2	23.7	27 1.2	47 1.9	74.1	315 5.5	145 2.9	-54.0	337 6.3	356 5.9	5.6	13 1.6	L -	-	18 2.0	28 3.3	55.5
Manufacturing	25 0.9	18 0.6	-28.0	52 2.3	53 2.2	+1.9	216 3.7	115 2.3	-46.8	281 5.2	287 4.8	+2.1	D -	D -	-	L -	L -	
Transportation and Public Utilities	55 2.0	64 2.2	16.4	94 4.1	111 4.5	18.1	319 5.5	320 6.4	0.3	177 3.3	245 4.1	38.4	L -	L -	-	D -	D -	-
Wholesale Trade	62 2.3	87 2.9	40.0	37 1.6	74 3.0	100.0	119 2.1	226 4.5	89.9	72 1.3	218 3.6	+202.8	0 -	L -	-	22 2.5	D -	-
Retail Trade	334 12.4	275 9.3	-17.7	244 10.7	261 10.7	7.0	786 13.6	732 14.7	-6.9	840 15.6	854 14.2	1.7	93 11.3	77 10.2	-17.2	74 8.4	66 7.9	-10.8
Finance, Insurance, and Real Estate	61 2.3	66 2.2	8.2	36 1.6	53 2.2	47.2	107 1.9	132 2.6	23.4	146 2.7	197 3.3	34.9	D -	14 1.8	-	D -	12 1.4	-
Services	332 12.4	626 21.1	88.6	208 9.2	302 12.4	45.2	1,085 18.8	824 16.5	-24.1	543 10.1	855 14.2	57.5	41 5.0	20 2.6	-51.2	97 11.0	42 5.0	-56.7
Government	658 24.5	664 22.4	0.9	442 19.4	371 15.2	-16.0	1,215 21.0	908 18.2	-25.3	1,014 18.8	1,194 19.8	17.8	191 23.2	185 24.4	-3.1	227 25.8	187 22.3	-17.6
TOTAL	2,684	2,967	10.5	2,273	2,440	-7.3	5,778	4,993	-13.6	5,389	6,018	11.7	825	758	-8.1	881	839	-4.8

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, April 1981.

L: Less than 10 wage and salary jobs.

D: Not shown to avoid disclosure of confidential data (data are included in totals).

APPENDIX 3.8: COUNTY EARNINGS BY SOURCE (IN THOUSANDS OF DOLLARS)

	Blaine			Phillips			Valley			Fergus			Garfield			Prairie		
Source	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79	1974 # %	1979 # %	% 74-79
Agriculture	10,283 44.9	-1,963 -9.8	-119.1	19,055 49.0	1,754 8.7	-80.6	10,486 20.6	-3,211 -7.2	-130.6	15,961 35.2	6,717 10.9	-57.9	4,813 65.9	1,877 35.7	-61.0	4,596 58.7	52 1.0	-98.9
Ag. Services, Forestry, Fisheries, and Other	325 1.4	D -	-	175 0.9	D -	-	180 0.4	D -	-	255 0.6	417 0.7	63.5	55 0.8	D -	-	71 0.9	151 2.8	112.7
Mining	148 0.6	D -	-	129 0.7	D -	-	250 0.5	D -	-	697 1.5	77 0.1	-89.0	114 1.6	D -	-	0 0.0	0 0.0	0
Construction	1,022 4.5	2,036 10.2	99.2	488 2.6	1,092 5.4	123.8	6,008 11.8	4,906 11.0	-18.3	4,723 10.4	7,747 12.6	64.0	181 2.5	142 2.7	-21.5	336 4.3	631 11.7	87.8
Manufacturing	150 0.7	155 0.8	3.3	437 2.4	691 3.4	58.1	1,717 3.4	1,437 3.2	-16.3	2,530 5.6	3,898 6.3	54.1	D -	D -	-	L -	L -	-
Transportation and Public Utilities	643 2.8	1,237 6.2	92.4	1,101 6.0	2,221 11.1	101.7	4,070 8.0	6,896 15.4	69.4	2,273 5.0	4,992 8.1	119.6	L -	110 2.1	-	D -	D -	-
Wholesale Trade	665 2.9	1,107 5.5	66.5	549 3.0	1,095 5.5	99.5	1,482 2.9	2,832 6.3	91.1	974 2.1	2,930 4.8	200.8	L -	87 1.7	-	249 3.2	D -	-
Retail Trade	2,553 11.2	3,019 15.1	18.3	2,040 11.0	2,800 14.0	37.3	5,814 11.4	7,093 15.9	22.0	5,881 13.0	7,708 12.5	31.1	624 8.5	820 15.6	-31.4	761 9.7	1,002 18.6	31.7
Finance, Insurance and Real Estate	543 2.4	1,098 5.5	102.2	294 1.6	792 4.0	169.4	1,066 2.1	2,193 4.9	105.7	1,240 2.7	2,670 4.3	115.3	D	251 4.8	-	D	224 4.2	-
Services	1,823 8.0	5,048 25.3	176.9	1,304 7.1	3,078 15.4	136.0	9,995 19.7	10,944 24.5	9.5	3,990 8.8	10,424 17.0	161.3	283 3.9	284 5.4	0.4	388 5.0	399 7.4	2.8
Government	4,733 20.7	7,324 36.7	53.9	2,904 15.7	3,735 18.6	28.6	9,776 19.2	10,762 24.1	10.1	6,823 15.3	13,842 22.5	102.9	1,065 14.6	1,452 27.6	36.3	1,037 13.2	1,490 26.7	38.9
TOTAL	22,888	19,951	-12,8	18,476	20,049	8.5	50,844	44,689	-12.1	45,347	61,422	35.4	7,309	5,256	-28.1	7,830	5,385	-31.2

L: Less than 10 wage and salary jobs.

D: Not shown to avoid disclosure of confidential data (data are included in totals).

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, April 1981.

APPENDIX 3.9: CONTRIBUTIONS OF LEROY AND CAT CREEK FIELDS TO COUNTY PROPERTY TAX BASE

	1978 Production/ 1979 Taxation	1979 Production/ 1980 Taxation	1980 Production/ 1981 Taxation
LEROY FIELD			
Total Field Production[1] (MCF)	622,024	981,041	851,102
Leroy Field Production as a % of the State Total[1]	1.3	1.8	1.6
Leroy Field Production as a % of the County Total[1,2]	6.1	6.3	6.6
Leroy Field Total Taxable Amount as a % of County Total Taxable Amount[3] (All Property Taxes)	3.7	3.9	3.9
CAT CREEK FIELD*			
Total Field Production[1] (Bbl)	99,367	88,990	96,722
Cat Creek Field Production as a % of the State Total[1]	0.3	0.3	0.3
Cat Creek Field Production as a % of the County Total[1,2]	100	100	100
Cat Creek Total Taxable Amount as a % of County Total Taxable Amount[2,4] (All Property-Taxes - Garfield County only)	2.7	4.7	4.9
Cat Creek Total Taxable Amount as a % of County Total Taxable Amount[2,4] (All Property Taxes - Expressed as if Cat Creek Field was located entirely in Garfield County)	12.9	18.0	22.4

* Cat Creek Field is located in Garfield County (with approximately 20% of production) and Petroleum County (with approximately 80% of production).

Sources:

1. Department of Natural Resources and Conservation of State of Montana, Oil and Gas Conservation Division, Annual Reviews for the years 1978, 1979, 1980, Vols. 22, 23, 24, Board of Oil and Gas Conservation.
2. State Department of Revenue, Report to the Members of the 47th Legislative Assembly of the State of Montana for the Period July 1, 1978 to June 30, 1980.
3. Personal Communication with State Department of Revenue 12/01/81.
4. Personal Communication with County Assessor's Office, Blaine County, 12/10/81.

APPENDIX 3.10: STATE ECOSYSTEM/LANDFORM REPRESENTATION

A. Ecosystem/Landform

Existing Representations in Statutory Wilderness

No.	Name	BLM Areas		Other Agency Areas*			BLM Areas - Other States			Other Agency Areas*		
		No. Areas	Acreage	Agency	No.	Acreage	State	No.	Acreage	State	No.	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	USFWS	1	20,847	N/A	N/A	N/A	N/A	N/A	N/A
	Totals											

B. Ecosystem/Landform

Representations in Wilderness Endorsed by President - Pending Before Congress

No.	Name	BLM Areas		Other Agency Areas*			BLM Areas - Other States			Other Agency Areas*		
		No. Areas	Acreage	Agency	No.	Acreage	State	No.	Acreage	State	No.	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	USFWS	15	161,480	N/A	N/A	N/A	N/A	N/A	N/A
	Totals											

C. Ecosystem/Landform

Potential Sources of Representations

No.	Name	BLM WSAs				Other Agency WSAs*		
		District	No.	Acreage	Agency	Region, Park, Refuge	No.	Acreage
Bailey/ Kuchler #57	Grama/ Needlegrass/ Wheatgrass	Lewistown,	8	152,437	N/A	N/A	N/A	N/A
		Miles City	5	81,372				
		Butte	1	5,976				

* Includes areas administered by the State as Wilderness.

NATIONAL ECOSYSTEM/LANDFORM REPRESENTATION

A. Ecosystem/Landform

Existing Representations in Statutory Wilderness

No.	Name	State	BLM Areas			State	Other Agency Areas*		
			District	No.	Acreage		Agency	No.	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A	Montana	USFWS	1	20,847

B. Ecosystem/Landform

Representatives in Wilderness Endorsed by President - Pending Before Congress

No.	Name	State	BLM Areas			State	Other Agency Areas*		
			District	No.	Acreage		Agency	No.	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A	Montana	USFWS	15	161,480

C. Ecosystem/Landform

Location of BLM WSAs with Potential Representations

No.	Name	State	District	Number of Areas	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	Montana	Lewistown	8	152,437
			Miles City	5	81,372
			Butte	1	5,976
		Wyoming	Casper	3	28,931

D. Ecosystem/Landform

Location of Other Agency Study Areas with Potential Representations*

No.	Name	State	District	Number of Areas	Acreage
Bailey/ Kuchler #57	Grama/Needlegrass/ Wheatgrass	N/A	N/A	N/A	N/A

* Includes areas administered by the State as Wilderness.

Source: BLM, 1981

APPENDIX 3.11: PROXIMITY TO POPULATION CENTERS

A.

SMSA Unit Number	Total Acres	Population Centers Within One Day's Travel Time of WSA's Names of Cities and States	Statutory Wilderness Within One Day's Travel Time of Identified Population Centers State	BLM No.	Acreage	State	Other Agency* No.	Acreage
0880	4,559,142	Billings, Montana	N/A	N/A	N/A	Montana	6	2,380,100
						Wyoming	5	2,179,042
3040	8,073,567	Great Falls, Montana	N/A	N/A	N/A	Montana	13	3,160,539
						Wyoming	3	1,594,800
						Idaho	2	3,318,228
N/A	121,955	Bismarck, North Dakota	N/A	N/A	N/A	Montana	1	11,800
						S. Dakota	1	64,250
						N. Dakota	3	39,725
						Minnesota	2	6,180

B.

SMSA Unit Number	Total Acres	Population Centers Within One Day's Travel Time of WSA's Names of Cities and States	Wilderness Areas Endorsed by the President Within One Day's Travel Time of Identified Population Centers State	BLM No.	Acreage	State	Other Agency* No.	Acreage
0880	3,446,800 Est.	Billings, Montana	N/A	N/A	N/A	Montana	33	676,300 Est.
						Wyoming	21	2,770,500 Est.
3040	4,617,100 Est.	Great Falls, Montana	N/A	N/A	N/A	Montana	48	1,911,300 Est.
						Wyoming	12	2,048,000 Est.
						Idaho	11	657,800 Est.
N/A	24,400	Bismarck, North Dakota	N/A	N/A	N/A	Montana	1	16,600
						N. Dakota	1	7,800

C.

SMSA Unit Number	Total Acres	Population Centers Within One Day's Travel Time of WSA's Names of Cities and States	Other Study Areas Within One Day's Travel Time of Identified Population Centers State	BLM No.	Acreage	State	Other Agency* No.	Acreage
0880	2,431,842 Est.	Billings, Montana	Montana	41	414,404	Montana	23	1,152,900 Est.
			Wyoming	34	320,596	Wyoming	6	365,200 Est.
			Idaho	1	24,922	Idaho	2	153,750 Est.
3040	1,694,828 Est.	Great Falls, Montana	Montana	37	358,300	Montana	25	1,207,750 Est.
			Wyoming	1	25,210	Idaho	2	49,200 Est.
			Idaho	5	54,368	N/A	N/A	N/A
N/A	72,508	Bismarck, North Dakota	Montana Wyoming	4	60,089	N/A	N/A	N/A
				1	12,419	N/A	N/A	N/A

* Includes areas administered by the State as Wilderness.

Source: BLM, 1981

APPENDIX 3.12: STATEWIDE WILDERNESS STATUS SUMMARY

A. Status of BLM Areas Under Study

County	BLM District	Unit Number	Total Acreage	Study Start and Completion Dates Start	Completion	Status
Madison	Butte	MT-076-001	26,357	1981	1982	MFP 2 Complete
Beaverhead	Butte	MT-076-002	17,639	1981	1982	MFP 2 Complete
Beaverhead	Butte	MT-076-007	6,180	1981	1982	MFP 2 Complete
Beaverhead	Butte	MT-076-022	15,475	1981	1982	MFP 2 Complete
Beaverhead	Butte	MT-076-026	9,588	1981	1982	MFP 2 Complete
Beaverhead	Butte	MT-076-028	9,756	1981	1982	MFP 2 Complete
Beaverhead	Butte	MT-076-034	1,260	1981	1982	MFP 2 Complete
Madison	Butte	MT-076-063	860	1981	1982	MFP 2 Complete
Madison	Butte	MT-076-069	6,578	1981	1982	MFP 2 Complete
Madison	Butte	MT-076-079	1,469	1981	1982	MFP 2 Complete
Teton	Butte	MT-075-102	4,927	1980	1983	URA 2 Complete
Teton	Butte	MT-075-105	3,085	1980	1983	URA 2 Complete
Teton	Butte	MT-075-106	3,086	1980	1983	URA 2 Complete
Teton	Butte	MT-075-107	196	1980	1983	URA 2 Complete
Lewis & Clark	Butte	MT-075-110	595	1980	1983	URA 2 Complete
Jefferson	Butte	MT-075-114	3,585	1980	1983	URA 2 Complete
Jefferson	Butte	MT-075-115	5,976	1980	1983	URA 2 Complete
Park	Butte	MT-075-133	53	1980	1983	URA 2 Complete
Powell	Butte	MT-074-150	11,580	1982	1985	
Powell	Butte	MT-074-151a	11,380	1982	1985	
Powell	Butte	MT-074-151b	4,257	1982	1985	
Granite	Butte	MT-074-155	520	1982	1985	
Carbon	Lewistown	MT-067-205	3,955	1982	1984	URA 2 Complete
Carbon	Lewistown	MT-067-206	12,575	1982	1984	URA 2 Complete
Carbon	Lewistown	MT-067-207	4,470	1982	1984	URA 2 Complete
Golden Valley	Lewistown	MT-067-212	6,870	1982	1984	URA 2 Complete
Fergus	Lewistown	MT-068-244	5,230	1981	1982	MFP 2 Complete
Fergus	Lewistown	MT-068-246	7,855	1981	1982	MFP 2 Complete
Blaine	Lewistown	MT-060-250	4,700	1981	1982	MFP 2 Complete
Blaine	Lewistown	MT-060-253	12,000	1981	1981	MFP 2 Complete
Phillips	Lewistown	MT-060-256	36,200	1981	1982	MFP 2 Complete
Phillips	Lewistown	MT-065-266	12,340	1981	1982	MFP 2 Complete
Valley-Phillips	Lewistown	MT-065-278	15,000	1981	1982	MFP 2 Complete
Valley	Lewistown	MT-064-356	59,112	1982	1986	
Garfield	Miles City	MT-024-633	3,480	1981	1982	MFP 2 Complete
Garfield	Miles City	MT-024-657	19,677	1981	1982	MFP 2 Complete
Garfield	Miles City	MT-024-675	5,650	1981	1982	MFP 2 Complete
Garfield	Miles City	MT-024-677	8,050	1981	1982	MFP 2 Complete
Prairie	Miles City	MT-024-684	44,515	1981	1982	MFP 2 Complete
Rosebud	Miles City	MT-027-701	8,440	1981	1984	URA 2 Complete
Powder River	Miles City	MT-027-702	5,650	1981	1984	URA 2 Complete
Rosebud	Miles City	MT-027-736	1,484	1981	1984	URA 2 Complete

B. Recommendations Transmitted by this Report

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	Recommendations Acres Suitable	Acres Nonsuitable
Miles City Lewistown	Big Dry Havre Judith Phillips Valley	Missouri Breaks Wilderness Study EIS	-	-	-	-	-

C. Completed BLM Studies -- Awaiting Presidential Recommendations

District	Resource Area	Plan Name	Unit Number	Unit Name	Total Acreage	SD's Preliminary Recommendations	
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

D. Statutory Wilderness (all agencies)

Agency	County(s)	Unit Name & Number	Unit Acreage
BLM	N/A	N/A	N/A

Agency	County(s)	Unit Name & Number	Unit Acreage
USFS	Carbon, Stillwater, Sweetgrass, Park	Absaroka-Beartooth, NF 106	920,377
USFS	Granite, Ravalli, Deer Lodge, Beaverhead	Anaconda-Pintler, NF 003	157,874
USFS	Flathead, Teton, Lewis & Clark, Powell	Bob Marshall, NF 005	1,009,356
USFS	Lincoln, Sanders	Cabinets, NF 010	94,272
USFS	Lewis & Clark	Gates of the Mountains, NF 027	28,562
USFS	Flathead Lake,	Great Bear, NF 107	286,700
USFS	Missoula	Mission Mountains, NF 050	73,877
USFS	Missoula	Rattlesnake, 1-801	20,000
USFS	Lewis & Clark, Powell	Scapegoat, NF 073	239,296
USFS	Ravalli	Selway-Bitterroot, NF 074	248,893
USFS	Granite	Welcome Creek, NF 103	28,135
	TOTAL USFS	Number of Areas 11	3,107,342

Agency	County(s)	Unit Name & Number	Unit Acreage
USFWS	Beaverhead	Red Rock Lakes, WR-036	32,350
USFWS	Sheridan	Medicine Lake National Wildlife Refuge, WR-027	11,800
USFWS	Phillips	UL Bend National Wildlife Refuge, WR-047	20,847
	TOTAL USFWS	Number of Areas 3	64,997

Agency	County(s)	Unit Name & Number	Unit Acreage
NPS	N/A	N/A	N/A

Agency	County(s)	Unit Name & Number	Unit Acreage
State Administered	N/A	N/A	N/A

E. Recommendations Pending Before Congress (all agencies)

Agency	County(s)	Unit Name	Unit Number	Unit Acreage[e]
USFS	Lincoln	Cabinet Face West	C 1670	8,250
USFS	Sanders, Lincoln	Scotchman Peaks	A & B 1662	60,416
USFS	Sanders	Cabinet Mtn. Addition	C 1681	442
USFS	Sanders	Chippewa Creek (Cabinet Mtn. Addition)	1682	382
USFS	Sanders	McKay Creek	B 1676	6,510
USFS	Ravalli	Schley Mountain (Great Burn)	D 1301	12,600
USFS	Ravalli	Hoodoo (Great Burn)	Q 1301	65,097
USFS	Ravalli	Blodgett Canyon	1061	9,600
USFS	Ravalli	N. Fork, Lost Horse	1062	8,598
USFS	Ravalli	Trapper Creek	1063	2,867
USFS	Ravalli	Nelson Lake	1064	3,233
USFS	Ravalli	Meadow Creek	M 1845	12,600
USFS	Ravalli	Swift Creek	1065	700
USFS	Ravalli	Needle Creek	1066	1,175
USFS	Ravalli	Selway-Bitterroot Addn.	S IBB	12,700
USFS	Beaverhead	North Big Hole	B 1001	7,027
USFS	Deer Lodge	Storm Lake	1427	6,065
USFS	Granite	Quigg (Slide Rock)	Q 1807	60,050
USFS	Beaverhead	West Big Hole	I 1943	56,462
USFS	Beaverhead	East Pioneer (Torrey Pk.)	1008	87,746
USFS	Madison, Gallatin	Lionhead	1963	20,899
USFS	Madison, Gallatin	Spanish Peaks	NF 920	63,300
USFS	Park	Republic Mountain (N. Absaroka Addition)	1545	480
USFS	Park	Reef (N. Absaroka Addn.)	1914	427
USFS	Carbon	Lost Water	1362	9,500
USFS	Rosebud	Tongue River	1373	16,600
USFS	Missoula, Powell	Great Bear-Bob Marshall Scapegoat-Swan	B 1485	3,825
USFS	Powell, Lewis & Clark	Clearwater-Monture	Q 1485	65,385
USFS	Lewis & Clark	Park Bridge	U 1485	3,255
USFS	Lewis & Clark	Renshaw	W 1485	25,649
USFS	Lewis & Clark	Leavitt Creek	T 1485	2,400
USFS	Lewis & Clark	Silverking Falls Creek	F 1485	38,300
USFS	Lewis & Clark	Big Log	W 1610	9,272
	TOTAL USFS	Number of Areas 34		681,812

[e] All Acreages Approximate.

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
USFWS	Garfield	East Seven Blackfoot	FW 923-1	12,184
USFWS	Phillips	Mickey Butte	FW 923-2	17,413
USFWS	Phillips, Valley	Burnt Lodge	FW 923-3	22,976
USFWS	Garfield	Billy Creek	FW 923-4	11,556
USFWS	Garfield	West Seven Blackfoot	FW 923-5	7,096
USFWS	Phillips	Antelope Creek	FW 923-6	5,382
USFWS	Garfield	West Hill Creek	FW 923-7	11,896
USFWS	Petroleum	Fort Musselshell	FW 923-8	8,303
USFWS	Garfield	Sheep Creek	FW 923-9	12,424
USFWS	Phillips	West Beauchamp	FW 923-10	6,736
USFWS	Garfield	Wagon Coulee	FW 923-11	10,528
USFWS	Petroleum	Alkali Creek	FW 923-12	6,592
USFWS	Petroleum	Crooked Creek	FW 923-13	6,842
USFWS	Garfield	East Hell Creek	FW 923-14	15,984
USFWS	Garfield	East Beauchamp	FW 923-15	5,568
	TOTAL USFWS	Number of Areas 15		161,480

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
NPS	Flathead, Glacier	Glacier	NP-915	917,600
NPS	Park, Gallatin	Yellowstone	NP-928	167,060
	TOTAL NPS	Number of Areas 2		1,084,660

F. Other Agency Areas Under Study

Agency	County(s)	Unit Name	Unit Number	Unit Acreage*
USFS	Lincoln	Ten Lakes	1683	33,885
USFS	Lincoln	Mt. Henry	1666	21,000
USFS	Ravalli	Blue Joint Mt.	A 1941	61,400
USFS	Granite, Powell	Flint Range	1428	52,220
USFS	Granite, Powell	Dolus Lake	1429	9,100
USFS	Granite, Ravalli	Sapphires	1421	98,815
USFS	Teton	Deep Creek	P 1485	26,068
USFS	Teton	Reservoir North	H 1485	1,520
USFS	Beaverhead	West Pioneer	1006	147,992
USFS	Madison	Middle Mtn.-Tobacco Roots	B 1013	36,640
USFS	Jefferson, Broadwater	Bullock Hill	A 1620	59,980
USFS	Jefferson, Broadwater	Casey Peak	E 1620	25,000
USFS	Madison, Gallatin	Madison	N 1549	80,057
USFS	Gallatin	Madison	E 1549	105,760
USFS	Madison, Gallatin	Madison S.	S 1549	77,559
USFS	Madison, Gallatin	Madison	R 1549	32,640
USFS	Gallatin, Park	Gallatin Divide	G 1548	81,582
USFS	Gallatin, Park	Hyalite	H 1548	22,268
USFS	Beaverhead	Mt. Jefferson	1962	4,600
USFS	Fergus, Golden Valley	Big Snowies	A,B,S 1739	95,861
USFS	Meagher, Judith Basin	Middle Fork Judith	1734	91,000
USFS	Beaverhead	Italian Peak	I 1945	12,996
USFS	Madison	Madison	J 1549	29,826
	TOTAL USFS	Number of Areas 25		1,207,769

* All Acreages Approximate.

Agency	County(s)	Unit Name	Unit Number	Unit Acreage
NPS	Big Horn	Big Horn Canyon		7,645
	TOTAL NPS	Number of Areas 1		7,645

G. Ecosystem/Landform Representations of Areas Recommended in this Report

Ecosystem/Landforms
Represented by Unit
Name: Gramma/Needle-grass/Wheatgrass
No. 057

Unit Number	No.	Name	Number of Existing Representations in Statutory Wilderness						Number of Representations in Wilderness Endorsed by the President					
			State		Region		NWPS		State		Region		NWPS	
			BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency	BLM	Other Agency
All units	(1)	suitable recommendations	N/A	1	N/A	1	N/A	1	N/A	15	N/A	15	N/A	15
	(2)	nonsuitable recommendations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

H. Population Centers Within One Day's Travel of Areas Recommended in This Report

Unit Number	Population Centers Within One Day's Driving Time of Unit Names of Cities and States	Number of Statutory Wilderness Areas Within One Day's Drive of Identified Population Centers		No. of Wilderness Areas Endorsed by the President Within One Day's Drive of Identified Population Centers	
		BLM	Other Agency	BLM	Other Agency
All units	Billings, Montana	N/A	11	N/A	54
	Great Falls, Montana	N/A	18	N/A	71
	Bismarck/Mandan,,North Dakota	N/A	7	N/A	2

Source: BLM, 1981

APPENDIX 4.1: STATE DIRECTOR'S WILDERNESS MANAGEMENT POLICY INTERPRETATION

IN REPLY REFER TO:
8500 (933)

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
222 North 32nd Street
P.O. Box 30157
Billings, Montana 59107

24 MAR 1982

Instruction Memorandum No. MT-82-159
Expires 9/30/83

To: District Managers

From: State Director

Subject: Wilderness Management Policy

Some of you have raised questions about the interpretation and application of the Wilderness Management Policy (WMP). Specific concerns have centered around: The use of motorized equipment for rangeland management, maintenance of rangeland management facilities, the interrelationship between wilderness designation, AMPs and wilderness management plans, construction of new range management facilities, prescribed burning in wilderness areas, and sport hunting of predators.

The WMP appropriately states the "no policy document can address every potential situation," in this respect, this IM is no different from the WMP and does not attempt to "address every potential situation." We will, however, attempt to address those specific concerns you have raised which lend themselves to a specific statewide policy. Other management policy issues will be handled on a case-by-case basis. It must also be recognized that this IM does not replace the WMP but rather provides our in-state interpretation of how the WMP is to be applied in certain instances. As such, this IM is to be used in conjunction with the WMP as Montana's management policy for activities within wilderness areas.

The meaning of the Congressional mandate to the Bureau for wilderness management is adequately expressed in Section I.C. of the WMP. Section I.C. includes three concepts which are the basis for the management policy. These concepts are (1) wilderness preservation concept, (2) wilderness use concept, and (3) nonconforming use concept. Of primary interest to us for purposes of this interpretation is the nonconforming use concept. The management policy indicates that certain uses, as directed by Congress, although nonconforming to the general management provisions of Sections 2(a), 4(b), and 4(c) of the Wilderness Act of 1964, are acceptable. The policy further states that because FLPMA directs that all uses of the public lands be conducted so as to prevent unnecessary or undue degradation of the lands, this also applies to wilderness areas. This means that nonconforming but accepted uses must be managed so as to prevent unnecessary or undue degradation of the wilderness character of a designated wilderness area. This management may include restricting or excluding these nonconforming uses where particularly sensitive resource values, such as threatened or endangered species habitats, or public interest dictate. The term "unnecessary or undue degradation" is adequately defined in Appendix D of the WMP and Section II.A.2. of the WMP specifically states that, "the Department's policy is to allow the nonconforming but accepted uses specifically permitted in wilderness areas by the Wilderness Act and subsequent laws in a manner that will prevent unnecessary or undue degradation of the area's wilderness character."

Two additional guiding principles appear in the WMP. These are (1) regulation of all activities in a wilderness area should be practical and reasonable, and (2) specific management objectives, requirements, policies and decisions will be developed and described on a case-by-case basis in a Wilderness Management Plan prepared for each wilderness area subsequent to designation.

Based on these concepts and principles, we provide the following clarifications:

1. Motor vehicles, motorized equipment, or mechanical transport shall not be used for the routine checking of livestock, facility, or range condition, because horseback or foot travel are reasonable alternatives.

2. Motor vehicles, motorized equipment, and/or mechanical transport may be used to haul livestock, including bulls, over existing vehicle ways to distribution points within pastures. Spreading of the stock to new areas of the pasture for forage utilization, water availability, or to ensure breeding must, however, be done by nonmechanized, nonmotorized means. Herding of stock to gathering points on vehicle ways will be done by nonmechanized, nonmotorized means. Transport of stock from gathering points to points outside the wilderness area may be accomplished by motorized and/or mechanized means over existing vehicle ways.

3. Motor vehicles, motorized equipment, and/or mechanical transport may be used to haul large quantities of salt, mineral block, and fencing materials over existing vehicle ways to distribution points within the wilderness area. Subsequent distribution of these materials will be handled by nonmotorized, nonmechanical means.

4. Where it is necessary to break ice from watering facilities on a regular basis during winter grazing periods, vehicular access over existing vehicle ways for this purpose will be permitted.

5. The maintenance of existing rangeland improvements or construction of new improvements which are necessary for the continuation of livestock grazing and the protection of the rangeland resource will be permitted. Where motor vehicles, motorized equipment, and/or mechanical transport are deemed to be the "minimum tool" necessary to accomplish the maintenance or construction, their use will be permitted. Where it may be necessary

to undertake temporary improvement of existing vehicle ways to permit safe access to necessary equipment to perform required maintenance, such improvement will be allowed as long as it meets the applicable conditions of paragraphs d.(1) through d.(12) of Section III.H. For major fence repair, where travel by motor vehicles off of existing ways is determined to be the minimum tool, such travel will be permitted.

6. The simple fact that an area has been designated wilderness by Congress will not automatically force the preparation of an AMP for those allotments which are entirely or partially included in the wilderness area. AMPs will continue to be prepared only as required by grazing regulations and/or manuals.

7. The use of prescribed burning in wilderness areas shall be accomplished as set forth in the WMP and Instruction Memorandum No. MT-82-9. For the purposes of this guidance, "fire dependent ecosystem" is defined as one in which fire is necessary for propagation, such as fire pines or California chaparral.

8. It is clearly the intent of Congress that no reductions in the number of livestock allowed to graze in a wilderness area will occur simply because an area has been designated as wilderness. However, we recognize that, because of the constraints on maintenance and development of range management facilities, a situation could occur where deterioration of the range condition brought about by the nonmaintenance or nonconstruction of a facility would lead to a requirement for a reduction of grazing to prevent further deterioration of the range condition. In all cases, constraints to be applied in wilderness areas, including the full specifics of provisions for maintenance or construction of facilities, and use of motor vehicles or motorized equipment, will be specified in the Wilderness Management Plan and analyzed in the environmental assessment. These constraints and provisions shall then be made a part of the appropriate permits or licenses. The Wilderness Management Plan and Environmental Assessment will be prepared by an interdisciplinary team in full consultation with affected parties. Every effort shall be made during the preparation of the Wilderness Management Plan/Environmental Assessment to avoid situations which could lead to the necessity for a reduction in numbers of livestock because of deteriorating range condition.

For Michael J. Penfold

Distribution
Director (340) 1
SCD (D-559A) 3
RAHs 1
SD's Staff 1

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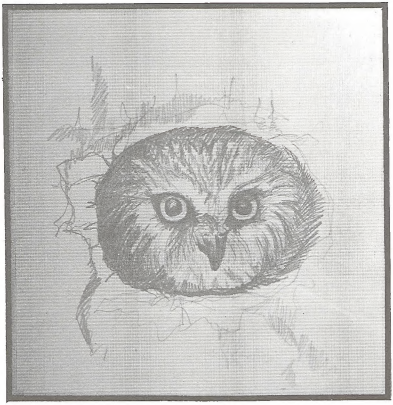

GLOSSARY

ACCELERATED EROSION. Erosion increased by human activities; also see "Natural Geologic Erosion."

ALLOTMENT MANAGEMENT PLAN (AMP). A written program of livestock grazing management, including supportive measures, if required, designed to attain specific management goals in a grazing allotment.

ANIMAL UNIT MONTH (AUM). A standardized unit of measurement of the amount of forage necessary for the complete subsistence of one animal unit (one cow or one horse or five sheep, all over six months old) for one month.

BAILY-KUCHLER SYSTEM. A classification system that divides the United States into ecosystems based on climate, vegetation, soils and landform.

CHERRY-STEMMED ROAD. A road that enters but doesn't pass completely through a wilderness study area.

CULTURAL SITE. Any location that includes prehistoric and/or historic evidence of human use.

ECOSYSTEM. An ecological community together with its physical environment. Its functioning involves the circulation of matter and energy between organisms and their environment.

ENVIRONMENTAL IMPACT STATEMENT (EIS). A written analysis of the impacts on the environment of a proposed project or action.

FEDERAL LAND POLICY AND MANAGEMENT ACT (FLPMA). Public Law 94-579, October 21, 1976, referred to by the Bureau of Land Management as its "Organic Act," which provides most of BLM's legislated authority, direction, policy and basic guidance.

GRANDFATHERED ACTIVITY. Any land-surface disturbance or alteration that occurred in a wilderness study area before passage of FLPMA (see above).

HABITAT. A specific set of physical conditions that surround a species, group of species or a large community. In wildlife management, the major constituents of habitat are considered to be food, water, cover and living space.

INHOLDINGS. State or privately-owned lands inside a wilderness study area.

INTERIM MANAGEMENT POLICY (IMP). A BLM document which defines the policy for management of wilderness study areas until a final determination on wilderness designation is made by Congress.

KNOWN GEOLOGIC STRUCTURE (KGS). Areas known to contain producible oil and gas deposits.

LAND UTILIZATION (LU) LANDS. Land re-acquired and managed by BLM through the Bankhead Jones Act of 1937.

LEASABLE MINERALS. Minerals subject to lease by the Federal Government, including oil, gas and coal.

LOCATABLE MINERALS. Generally the metallic minerals subject to development specified in the Federal Mining Law of 1872.

MANAGEMENT FRAMEWORK PLAN (MFP). A planning decision document that establishes, for a given planning area, land use allocations, coordination guidelines for multiple use, and management objectives to be achieved for each class of land use protection. It is the BLM's land use plan. An MFP is prepared in three steps: (1) resource recommendations, (2) impact analysis and alternative development, and (3) decision making.

MULTIPLE USE. Balanced management of the various surface and subsurface resources, without permanent impairment of the productivity of the land that will best meet present and future needs.

NATURAL. Refers to an area which generally appears to have been affected primarily by the forces of nature with the imprint of man's work substantially unnoticeable.

NATURAL GEOLOGIC EROSION. The wearing away of the land's surface by running water, wind, ice or other geological agents, unaffected by human activities.

OFF-ROAD VEHICLE (ORV). Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain.

OUTSTANDING. Standing out among others of its kind; conspicuous; prominent; or, superior to others of its kind; distinguished; excellent.

PERMIT (GRAZING). An authorization that permits the grazing of a specified number and head of livestock on a designated area of BLM lands for a period of time, usually not more than one year.

PERMIT VALUE. The market value of a BLM grazing permit which is often included in the overall market value of the ranch.

PRE-FLPMA LEASES. Mineral leases issued pryor to passage of the Federal Land Policy and Management Act of October 21, 1976.

POPULATION CENTER. An SMSA (see below) with a population of 100,000 or more.

POST-FLPMA LEASES. Mineral leases issued after passage of the Federal Land Policy and Management Act of October 21, 1976.

PRIMITIVE RECREATION. Nonmotorized outdoor recreation that requires undeveloped areas in which to take place.

PUBLIC LANDS. Any land and interest in land (outside of Alaska) owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management.

RECREATIONAL OPPORTUNITY. Those outdoor recreation activities which offer satisfaction in a particular physical, social and management setting. In the EIS areas, these activities are primarily hunting, fishing, wildlife viewing, photography, boating and camping.

SIMULTANEOUS LEASING (OG SIM). Oil and gas estates on public lands leased through lottery-type drawings.

SOLITUDE. The state of being alone or remote from habitations; isolation or a lonely, unfrequented or secluded place.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA). A county containing at least one city with 50,000 inhabitants plus any adjacent urban territory.

TACK-ON. Public lands with wilderness characteristics but less than 5,000 acres in size adjacent to other public lands designated as wilderness or being studied for such designation.

VEHICULAR WAY. A trail maintained solely by the passage of vehicles.

VISUAL RESOURCES. The land, water, vegetation and animals that comprise the scenery of an area.

WILDERNESS AREA. An area formally designated by an act of Congress as part of the National Wilderness Preservation System.

WILDERNESS MANAGEMENT. The management of human use and influence on lands which have been designated by an Act of Congress as wilderness areas.

WILDERNESS STUDY AREA (WSA). An area determined to have wilderness characteristics. Study areas will be subject to interdisciplinary analysis and public comment to determine wilderness suitability. Suitable areas will be recommended to the President and Congress for wilderness designation.

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